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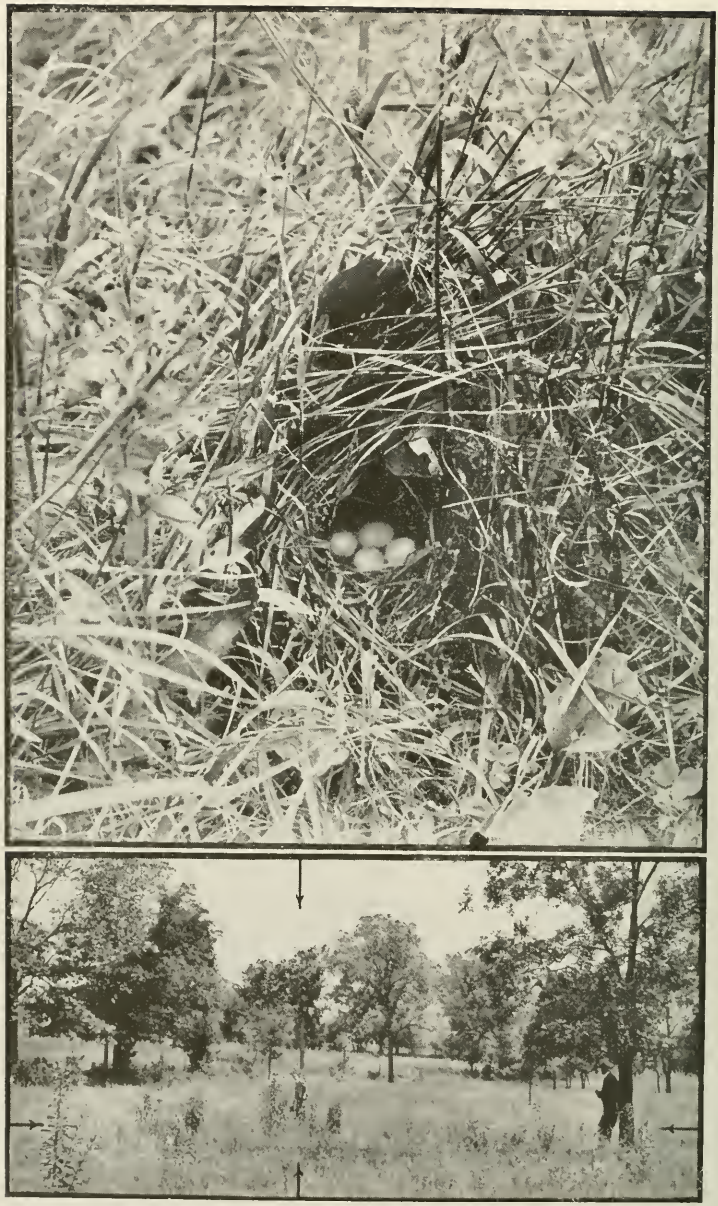

NEST AND EGGS OF BACHMANS SPARROWS

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NESTING OF BACHMANS SPARROW

ALBERT F. GAINER

Throughout middle Tennessee, the Bachmans Sparrow (*Peucæa æstivalis bachmani*) is a fairly common summer resident, where suitable habitat occurs. The habitat to which it is most partial consists of wooded pasture lands, in which there is a good growth of long grass, or tree bordered edges of old fields where grass rather than weeds predominate. Here its song may be heard from its arrival early in April until its departure in October. The surprising sweetness and clearness of its song has brought forth many published descriptions, among which might be mentioned one from this section, by Dr. R. M. Strong, which appeared in The Auk for April, 1918, page 226.

The nest of this sparrow is quite difficult to locate, due to the terrestrial habits of the birds and the difficulty of flushing them while incubating. The nest figured as the frontispiece of this issue was found by myself on July 20, 1918, when it held four fresh eggs. The lateness of the date was surprising. It was located in an extensive wooded pasture, about a mile south of the limits of Nashville, and the immediate environment is shown by the small photograph. The nest was found by flushing both birds from it. They flew only a yard and then began to run through the grass like mice. I walked after one for a distance of 100 feet before it took wing. On returning to my handkerchief, which I had left behind to mark the spot, I found the nest well hidden in the midst of thick grass. It much resembled a nest of the Meadowlark in that it was arched over and completely hidden from above. The nest was sub-

stantially built of coarse grass and was lined with fine grass and a few long horse hairs. There was no depression in the ground under the nest. The half acre adjacent to the site was low and damp and covered with long grass. A prolonged drouth had no doubt driven the birds from their usual habitat on higher ground to this relatively damp spot. The parent birds did not assert their presence while the nest was being photographed.

A week later, and within 50 feet of the nest site, I flushed a Bachmans Sparrow which feigned crippledness as it fluttered off through the grass. A search revealed two young birds just learning to fly and which were captured. The one parent bird present remained near and most persistently endeavored to lure me away by fluttering through the grass, sometimes coming to within five feet of where I held the young in my hand.

Nashville, Tenn.

COMPARATIVE PERIODS OF NESTLING LIFE OF SOME NORTH AMERICAN NIDICOLÆ

BY FRANK L. BURNS

The term Nidicolæ (Altrices) as defined by Dr. Newton indicates the species or groups of birds having the young born in a more or less helpless condition, unable to leave the nest for some time and fed directly by the parent. Little reliance, however, can be placed upon the mere fact of direct feeding of the young by the parents as a diagnosis of Nidicolæ, since the young of many præcocial groups (the Grebes, Loons, Murrelets, Gulls, Terns, Flamingoes and Cranes) are also heterophagous; therefore the distinction is better expressed by Dr. Gadow: in a condition in which the development of the sense, tegumentary and locomotory organs are shifted on to the post-embryonic period; in distinction to Nidifugæ (Præcoces), in which the development of the same organs are far advanced, enabling the young to leave the nesting site almost immediately after birth.

Modern systematists place little reliance on the con-

dition of the young at birth as a taxonomic character, though in the past, unsuccessful efforts have been made to produce a satisfactory physiological arrangement of our birds based upon this peculiar state, grouped in accordance with external characters such as the shape of the bill and feet.

In the Water Birds there are some groups of Nidicolæ more nearly related in every essential character to the lower Nidifugæ, though the relatively higher group, the strictly Land Birds, are nearly all Nidicolæ, the exceptions being the Gallinaceous birds.

Nidificate species constructing elaborate nests or laboriously tunneling in the earth or wood, are all or nearly all nidicolous; while the nidifugous birds are essentially terrestrial and frequently deposit their eggs on the bare ground or rocks, with the exception of the Ducks, which heavily line their nests with feathers plucked from their own breasts; at best their nests are little more than rubbish heaps of earth, leaves or grasses. As a taxonomic character for groups, there are some inconsistencies; the *Alcidæ*, for instance, are not all nidicolous; according to recent observations the young of the Murrelets (at least the Ancient, Xantus's, and Craveri's Murrelets, all of which take to the sea in from one to three or four days), are nidifugous.

The higher types of Nidicolæ (young hatched in a blind or helpless and naked or semi-naked condition, never acquiring natal down, or acquiring natal down growing from the tips of the juvenal plumage) are characteristic of the higher, more specialized groups.

It has been thought not only that the ancestral type of our birds was nidifugous but that the protective aboreal nesting habits led to nidicolous young; a hypothesis not at all nullified by the fact of so many nidicolous species belonging to phylogenetically older groups and to groups having ground-nesting or near ground-nesting habits; for these species nest exclusively or almost exclusively in colonies and on islands affording protection from their natural enemies equal if not superior to the elevation of the arbor-

eal nester on the mainland, and the conditions of environment made further changes impossible.

The eminent anatomist Pycroft in his paper entitled "The Significance of the Condition of the Young at Birth." (*Popular Science Monthly, lxii*, 108 *and further elaborated in "The Infancy of Animals,"*), however, considers that birds were originally arboreal. He states that the structure of the feet of the *Archæopteryx* (the earliest bird known to science) would prove it strictly arboreal and suggests the conclusion that the reptilian stock from which the Aves are descended was probably also arboreal, and considers that we probably have in the arboreal South American Hoactzin (the young of which scrambles about the branches in a truly reptilian manner) a direct survival of the proavian type of nesting; the nidifugous young differing from other nidifugous young in the prehensile character of its wings. He claims that the facts justify the theory, (1) that birds were originally arboreal and their young nidifugous; (2) that the nidicolous habits and helplessness of young birds are specialized adaptations to an arboreal or gregarous mode of life, and (3) that the young of Gallinaceous birds form a link in the chain of evolution of nidifugous habits. The free finger tips and arrested development of the outer quill-feathers point to a prior arboreal habit, whilst the accelerated development of the inner quill-feathers indicates an adaptation to enable the young to escape from enemies surrounding a terrestrial nursery.

He believes that systematists attach too much importance to the diverse conditions presented by the young of different groups of birds at birth and that the significance of these conditions has been misunderstood. The real explanation seems to turn to expediency, designed to reduce infant mortality: (1) by depositing the egg upon the ground, or (2) curtailing the activity of the young. "One great disadvantage attendant on precocious development of the young whose nursery is in the tree tops is obvious — the nestling would be constantly in danger of falling to the ground, and a large number would indeed

meet with this fate . . . those species which, while retaining their arboreal nesting habits, have adopted the method of curtailing the activity of the young. This process was accomplished by reducing the food-yolk within the egg, and thus inducing an earlier hatching period. We may approximately measure the extent to which this reduction has been carried by the degree of helplessness displayed by the newly hatched bird, and by the nature and extent of its clothing. . . . The amount of food-yolk once reduced, a return to the older fashion of active young was impossible, and this explains why young of many species hatched upon the ground are as helpless as those reared in the topmost boughs of the highest trees."

Young reptiles are always active at birth, and there is little doubt that the nidifugous or precocious bird is the most primitive type. It is reasonable to suppose that the *Archæopteryx* (a possible progenitor of the Passeres) was nidifugous, but it cannot be known positively that it was arboreal as a breeder: in fact its beak seems poorly adapted for nest-building, (few, if any of our Passerines employ the feet to any extent in that capacity) and there are well known instances of arboricole species of North America (the Yellow-bellied Flycatcher, Black and White Warbler and Hermit Thrush, for instance) descending to the ground to nest.

With accurate knowledge of the condition and early life history of only a limited number of North American birds, it is perhaps somewhat presumptuous to offer serious objection to the Pycroft theories, but my investigations, however superficial and touching only a small angle of the subject, would seem to show here and there an invalid premise or an erroneous conclusion.

Confirmatory evidence of the theory that birds were originally arboreal, would seem to be lacking in the behavior of our birds. In the more than occasional deposition of the eggs of individuals of species normally ground-nesters (the Herring Gull, some Ducks and Geese) in nests high up in trees, and the habitual arboreal nesting of some species of typical terrestrial-nesting groups of nidi-

fugous birds (the Noddy, Wood Duck and Solitary Sandpiper) the inference might be that these species were returning to a former habit, but it seems more reasonable to think that they are governed by a stronger impulse, that of the perpetuation of race in the face of persecution. Many species of the Nidifugæ have been known to feed their young directly, and some species of the Gulls, Ducks and shore birds are capable of carrying or conducting their young safely to the ground. That it is not impossible for nidifugous young to move about freely in an arboreal nursery, is shown by Dr. Beebe in his recent study of the Hoactzin, in which he pictures the downy young climbing about somewhat in the manner of a quadruped. We have little ground for the belief that the elevated nesting habit is more fatal to nidifugous birds than ground-nesting; in fact the death rate of the few arboreal Nidifugæ would appear not conspicuously different from the latter.

On the other hand, brooding birds of species of more or less typical arboreal habits, when directly from their nests, will sometimes flush to the ground to feign a crippled condition, and in so doing would seem to indicate a former ground-nesting habit. There are a few ground-nesting species in many groups of arboreal nesters, and there are more or less instances where members of various arboreal species of remote relationship easily form or resume a ground-nesting habit (the Mourning Dove, Osprey, Long-eared Owl, many species of Sparrows, Brown Thrasher, Robin, and possibly the Flicker) especially where conditions are favorable and molestation at a minimum. Isolated colonies of some of our Egrets and Herons have apparently been ground-nesters for ages, while other colonies of the same species nest high in trees. Some groups as remote as the Sparrows and the Cormorants, Pelicans and Man-o-war, nest indifferently in bushes or on the ground.

On the whole, a careful study of the nesting habits of many species of North American birds, would seem at least to indicate a much more general ground-nesting habit at some former period and that a number of species later

sought an elevated situation to avoid molestation. In the *Alcinæ,* perhaps several species are in an active state of evolution from typical Nidifugæ to a condition of nidicolous habits. The great bulk of the Atlantic, California and Brunnich's Murres, and the Razor-billed Auk, first see light on narrow ledges far above the sea in almost inaccessable cliffs, positions doubtless chosen ages past by the species to avoid molestation; the result is the enforced helplessness of the young for a period of from 25 to 35 or 40 days, until half grown; though normally possessed of considerable strength and activity when only a few days old. Macgillivray gives instances of the extraordinary hardihood of some very small, unfledged young of the Murre, which were observed swimming about in the vicinity of the rocks; chicks that must have had comparatively easy access to the water.

There are no data from which to build a table of comparative values of the yolk in birds' eggs, but my study of the incubation periods of many North American birds, convinces me that the eggs of the Nidicolæ do not always show a relatively earlier hatching period in comparison to the Nidifugæ. Eggs of some species vary enormously in size. I have the shells of some eggs laid by a small domestic hen, averaging 2.92 x 2.26 in inches, comparable to the measurements of the eggs of some of the Megapodes. Some typical Nidifugæ lay eggs of normal size and it is probable that the yolk is proportionally as small as many of the Nidicolæ. It is possible that the egg of the Hummingbird contains yolk comparable in bulk proportional to that of the Murre (both species laying eggs of very large size in comparison to the bodies of the parents) yet there are none more naked and helpless than the newly hatched young of the former, while the nidifugous young of the latter would buffet the sea in a few days were they not literally shelved.

Is a return to nidifugous habits impossible? Who can say in the instance of the Nighthawk and Whip-poor-will, whose young are enabled to abandon the nesting site on the ground within a few hours after birth, whether they are not approaching typical nidifugous habits in the early use

of their feet in conjunction with almost immediate eyesight and the early development of the nervous system?

There can be no doubt that nidicolous habits are not only beneficial in many instances to an arboreal or insular existance, but that they are in time inevitable to that mode of life. However, it is not a special adaptation to a gregarious habit, since so many birds of nidifugous habits also nest in colonies.

It seems to me that a more logical conclusion to the nidicolous habits of so many terrestrial nesters would be attributable to a primitive habit of breeding on islets or cliffs, or in caves, crevices or burrows; insular or elevated situations of any kind chosen primarily for seclusion and found advantageous for the enforced confinement of the young until they became more robust to withstand the elements and avoid their enemies; in countless succeeding generations the temporary disuse of limbs and slower development of some of the sense organs would result in one thing, just as we now observe the beginning of the same phenomena in the enforced sedentary life of the young Murres and Auks. The individual or species unable or unwilling to carry food to their young, would have to conduct them to the feeding ground, seek a more accessible situation for their nests where the precocious young could feed and exercise, or perish. Therefore nearly all sea birds nesting exclusively on small islands are nidicolous. The exceptions include the Murrelets, possibly some of the Longipennes, and the Flamingoes; probably because of the situation of their nests in reference to accessibility to the sea or to a comparatively recent resort to insular breeding. On the other hand, we have documentary proof of the typically nidicolous Gannet nesting upon a rocky islet for upward of six or seven hundred years (*Cf. Gurney, The Gannet, p. 44*) and doubtless it has so nested for untold ages, since it has never been known to nest on the mainland.

Notwithstanding the diagnosis of the Nidicolæ and Nidifugæ by Dr. Newton and Dr. Gadow, the line of demarcation in some instances is exceedingly faint and re-

duced, at least as far as the tyro is concerned, to a question of the sealed or open eye-lids of the young immediately after it has hatched, and even this may prove unreliable in a few instances. It is well known that in most, if not all Nidifugæ, the eyelids separate shortly before the bird is hatched and are wide open almost immediately after birth. Mr. A. B. Howell informs me that according to his observations all sea birds, except the precocial ones, are hatched with their eyes closed, but that they open within a day or so; just how long he is unable to state.

The *Phaëthontidæ*, *Fregatidæ*, *Ardeidæ* (at least the smaller species: Least Bittern and Green Heron); *Cathartidæ*, some of the smaller *Buteonidæ* (Marsh, Cooper's, Sharp-shinned and Broad-winged Hawks), Duck Hawk and Goatsucker, open their eyes wide within a day or two after birth. With most nidicolous birds, however, several days elapse between the separation of the eyelids and when they become wide open. In several instances, on the fourth or fifth day after birth, the eyes of the Mourning Dove, Cuckoo, Horned Lark, Brewer's Blackbird, Hooded Oriole, most Finches and Sparrows, Cedar Waxing, some Vireos, Wood Warblers, Mockers, Wrens, Hermit Thrush and Bluebird, are wide open. On the sixth or seventh day: Audubon's Caracara, some Hummingbirds, Pewee, Blue Jay, Red-eyed Vireo, Chickadee and Robin; eighth day, the Gannet, Belted Kingfisher and Crow; ninth day, the Purple Martin; tenth day, the Flicker; twelfth day, the Great Horned Owl and the fourteenth day the Chimney Swift.

Newton affirms that the young of nidicolous birds nesting on or near the ground in exposed situations, remain in the nest a relatively shorter time than those found nesting in less accessible situations. This in general seems to apply to our North American birds as far as known and would seem to infer only an earlier development of the sense of fear and of bipedal locomotion; for though the ground nestling may leave the nest at a relatively earlier age, precocity apparently does not extend to the wings or to the ability to care for itself exceptionally early. With some exceptions, fear develops almost immediately

after birth in our nidifugous young. Professor Herrick has intimated that the instinct of fear appears with comparative suddenness upon certain maturity of the nervous system, and while often premature, it is usually timed to correspond with a sufficiently advanced physical development to enable a retreat from threatened danger. It would seem impossible to discover the precise time of the acquisition of fear by the nestling, through the bungling methods, or rather lack of method, of the past; for fear may be present and remain latent for hours or days before an abrupt movement of the observer or the extreme nervousness of the parent lead to its discovery with startling suddenness, and I believe it is always preceded by the acquisition of sight.

Instinctive fear has been shown on the fourth to the fifth day by some of the Cuckoos and Sparrows; on the fifth to the sixth day by the Least Bittern, Mockingbird and Wren-tit; seventh to eighth day: Green Heron, Long-eared Owl, some of the Vireos, Wood Warblers and Brown Thrashers; tenth day: Mourning and Ground Doves, Red-shouldered Hawk, Cowbird, Catbird, Chickadee, Wood, Hermit and Olive-backed Thrushes and Robin; eleventh day: Cedar Waxwing and Blue Jay; twelfth day: Marsh Hawk and Crested Flycatcher; fourteenth day: Turkey Vulture, some of the Hummingbirds, Bluebird; sixteenth day: Sharp-shinned Hawk; twentieth day: Crow; twenty-first day: Anhinga, California Vulture, Duck Hawk and Magpie; twenty-fifth day: Golden Eagle and Belted Kingfisher; twenty-eighth day: Broad-winged Hawk. The Yellow-billed Tropic-Bird, according to the experience of Mr. Gross, never showed fear at any time.

The production of more than one brood in a season is rather rare among the Nidifugæ, the Grebes, some of the Murrelets and Ducks, the Bob-whites and Scaled Partridges, being among the few occasionally reproducing the second brood. With the Nidicolæ two or more families a season are much less uncommon, though perhaps not so regular as generally supposed; including, as far as known, some of our most abundant and widely distributed species;

among the *Oscines*, only those having an extended and continuous song period; and apparently only in the southern part of the breeding range of the Cuckoos and exceptional colonial species (the northern Cuckoo seldom produces a second brood though it often makes an attempt). The most productive species in point of families include the Tufted Puffin, Cassin's Auklet, Mourning and Ground Doves, Yellow-billed and Black-billed Cuckoos, Pewee, Say's and Black Phœbe, Horned Lark, English, Vesper, Chipping, Field, Song and Grasshopper Sparrow, Slate-colored Junco, Cardinal, Indigo Bunting, Mockingbird, Catbird, Brown Thrasher, House and Carolina Wrens, Robin and Bluebird. Apparently it does not occur to any extent among the lower orders, or the Birds of Prey, Woodpeckers, Kingfishers, Swifts or Hummingbirds, nor regularly in the *Passeres* among the Crows, Jays, Starlings, Grackles, Blackbirds, Orioles, Tanagers, Waxwings, Vireos, Warblers, Wagtails, Creepers, Nuthatches, Titmice or Kinglets.

That some species are more productive than others in the number of broods in a season, is of course due primarily to the prolonged duration of sexual instinct, or in other words, to a continuance of the peculiar physiological condition incident to reproduction, perhaps often repressed in the individual in the united movements of the colonial species, or more often lost for the season by the less dominant species through lessened vitality after a long period of waiting upon the young. The Land Birds included in the above list are birds with the requisite vitality and versatility to adapt themselves to environmental changes incident to civilization, and are among the most dominant species. They are all prompt, hardy nesters, therefore resident or only absent during the colder months, with the possible exception of the Indigo Bunting; all are more or less independent, especially for the earlier nesting site, of a camouflage of deciduous vegetation. For example, the Phœbe with no other advantage over other inornate-nesting Flycatchers, is enabled to produce two or more broods by beginning much earlier than other members of its family, and relining its nest for subsequent broods.

All multiple-brooded species have access to an abundant and unfailing food supply suitable for the young, or are adaptive to a varied and easily obtainable and seasonable diet. Most all feed upon seeds, insects or fruit as occasion requires and are consequently unaffected during seasonal scarcity of any one food. They are all builders of nests of simple construction. I know of no species in the northern part of the United States building an elaborate nest or tunneling in earth or wood for each clutch, regularly producing more than a single brood. They all have the effective assistance of the male, especially in taking charge of the offspring out of the first nest until they can shift for themselves. Finally, they have a brief nesting cycle. It is improbable that a nidicolous species incapable of confining the total period of nest building, deposition, incubation and nestling life to very much over six weeks, can regularly produce more than a single brood in Northern United States, also the nesting season must be brief or the parents will not be in a physiological condition to repeat.

Mr. Alfred C. Redfield carefully measured the work of a Belted Kingfisher nesting in a quarry at Radnor, Pa., April 2–18, 1908, and identified the sex of the excavator once as the female and once as the male.

Here are his notes:

1st day, hole just started
3rd day, about 8 inches deep.
5th day, about 15 inches deep.
6th day, 18 inches deep.
7th day, 23 inches deep.
8th day, 27 inches deep.
9th day, 36 inches deep.
10th day, 44 inches deep.
11th day, 47½ inches deep.
12th day, 51 inches deep.
13th day, 57½ inches deep.
14th day, 59 inches deep.
15th day, 59 inches deep.
16th day, 59 inches deep.

While there was no increase in depth on the last three

days, an accumulation of dirt made it certain that the birds had been working, probably in enlarging the end of the hole for the nest. With a nesting cycle of from two and one-half to three months, this species can hardly be other than single brooded.

Again to show the fine detailed work of some of our observers, I have assembled a table exhibiting day by day the increase in weight (in grams) of some nestlings taken in 1906 by the late John F. Ferry, Lake Forest, Ill. The Cedar Waxwing study (Aug. 20-28) is incomplete, but the development and length of nestling life of the Cowbird (June 11-22), Yellow Warbler (June 21-July 2) and Wood Thrush (June 11-22), exhibit a relatively slower growth, considering size, than the Catbird (June 13-24) and the Brown Thrasher (July 8-19).

	1st Day	2nd Day	3rd Day	4th Day	5th Day	6th Day	7th Day	8th Day	9th Day	10th Day	11th Day	12th Day
Cowbird				7.7	23.3		24.9		31.1	28.0		**
Cedar Waxwing	2.2	3.0	4.5	8.0	7.7				*			
	3.0	4.0	6.5	13.5	12.5	15.5	13.0		*			
	4.0	5.4	8.0	17.0	15.0	20.0			*			
	3.1	4.9	8.0	17.0	15.5	19.0	16.0		*			
Yellow Warbler				7.8	8.0	8.3	8.5					**
				6.2	7.2	8.3	7.3	7.7	9.4			**
Catbird		4.6			18.6	23.3	23.3	29.5	31.1	31.1	**	
av. 3 young	3.1	6.2	15.5	15.5	15.5	22.0	25.2	27.2	28.5	**		
Brown Thrasher	6.0	7.5	9.0	12.0	17.5	21.2	25.5	40.5	51.5	47.5	49.5	**
	8.2	9.5	13.0	17.0	23.5	28.2	35.0	38.0	45.0	39.0	42.5	**
	6.5	8.5	11.0	15.5	22.0	27.5	34.0					**
Wood Thrush	3.1											
			6.2	18.6			24.9		37.3	34.2		**

* Found dead. ** Departed.

[TO BE CONTINUED]

NOTES ON THE HABITS OF THE BREEDING WATER BIRDS OF CHATHAM COUNTY, GEORGIA

BY W. J. ERICHSEN, SAVANNAH, GA.

With few exceptions, which are properly noted hereinafter, these notes are based wholly on my observations in Chatham County, Georgia, during the years 1909-12 and 1914-19, all inclusive. While it is believed that every water bird that breeds or has ever bred in the county is here recorded, only those species of which the eggs or young have been taken are included.

I deem it unnecessary to give in this introduction an extended account of the physical aspect of the county — although such would not be out of place here — since the reader will find in the accounts of many species numerous references to and descriptions of their habitat, which at least give some idea of the topography of portions of the county. As the reader will, of course, infer from some of these accounts, Chatham County is situated on the coast, being the northernmost coastal county in Georgia. Its breeding water-bird life is neither greatly varied as to species nor abundant as to individuals, and on account of the somewhat inaccessibility of the nesting haunts of most species, my knowledge of the life-histories of several species is not extensive. In most cases where my own notes are lacking, the deficiency has been supplied by Troup D. Perry of Savannah, a veteran oologist, to whom grateful acknowledgements are due. Mr. Perry and I have been inseparable companions in the field for seven years. To G. R. Rossignol, also of Savannah, I am under obligations for assistance rendered in securing breeding data, even though such assistance was given me indirectly. I have accompanied Mr. Rossignol on many expeditions to the breeding haunts of water birds, and many times have enjoyed his hospitality at his summer home on Wilmington island.

With this brief introduction the author presents to the reader the following more or less fragmentary notes

on the habits of the breeding water birds of Chatham County, Georgia.

Sterna antillarum — Least Tern.

This beautiful tern formerly nested in great abundance on the isolated beaches of the larger coast islands, but since 1891 no eggs have been taken in this county. On my visits to the islands during the past five years I have noted Least Terns in increasing numbers, but I have so far failed to secure evidence that they have reëstablished themselves upon their former breeding grounds. The aspect of most of the beaches where they once nested remains unchanged, and hopes are entertained by local bird students that the birds will continue to increase and return to their old haunts. Commencing in late spring and continuing through the summer, numbers of these dainty birds may be seen fishing in the waters of Tybee inlet, but it is my belief that these individuals have merely wandered here from their breeding grounds to the north or south of this county. Long before I began the study of ornithology this species had ceased to breed in this locality, and for the following notes on its breeding habits I am indebted to T. D. Perry, whose experience with it is probably more extensive than that of any other Georgia ornithologist. From 1885 to 1890 large numbers of Least Terns annually resorted to the unfrequented beach of Warsaw island to rear their young. Although the birds were pretty evenly distributed over the entire five mile beach the most favored portion was near what is known as the "middle settlement," the name of which is explanatory of its location on the island. Mr. Perry tells me that at that time the beach at this point was wide; large areas of suitable shell-strewn sand being available for nesting sites. Most of the birds preferred that portion of the beach between high water mark and the sand dunes where numerous little tufts of vegetation were growing, affording protection for the young not only from the hot mid-day sun but from their numerous enemies as well. The eggs, usually three in number-were deposited in a slight depression in the bare sand.

Very rarely was there noted any attempt at concealing the eggs, although occasionally a set would be found lying at the base of a tuft of beach grass and partially shaded by it. Laying usually commenced the first week in June, and by the 15th of that month the breeding season was at its height. The first of Mr. Perry's several visits annually to Warsaw island was never made before the 10th of June, and he informs me that a number of times he has secured fresh eggs late in the month of July. Although he never fully determined how many broods were raised in a season, he is of the opinion that there was only one. Most authors agree on the subject that unless there is a mishap to the eggs only one set is laid. Their ground color varies from pale grayish-green to light olivaceous-drab; often it is clear buffy. The spotting consists of dots and splashes of brown and lilac, and is usually well distributed over the egg, although it frequently tends to form a wreath around the large end. In size the eggs average 1.25 x .95. These birds are very solicitous for the safety of their eggs and young, greeting the intruder with shrill cries and much circling overhead. The young, like those of all beach nesting birds, are adepts at hiding, their color blending so perfectly with their surroundings that once the eye is taken off them great difficulty is had in locating them again, even though the observer marks the spot where they lie. As soon as they are able to fly, the young, in company with the adults, resort to the sounds and inlets, where, at this season of the year, they obtain an abundant supply of food.

Since this species lately began to increase in numbers in this county, I have been much interested in studying its feeding habits, and, while it continues as formerly to show a preference for the larger bodies of water, I often observe it singly or in pairs fishing in the numerous narrow creeks and rivers that thread their way along this coast. In Tybee inlet there are numerous shoals more or less disconnected but together covering a wide area. Many of these banks are uncovered at low tide, but a number are perpetually washed by the breakers rolling in from the

sea. These waters teem with small fish, besides numerous other forms of aquatic animal life, and upon these Least Terns feed to a large extent. When fishing in these shallows the birds usually fly close to the surface, and their movements when plunging into the water are quick, and, although their speed is slightly checked before they reach the surface, there is always much splashing.

About the time that Least Terns were nesting so abundantly on Warsaw island Mr. Perry also secured a few sets of eggs on Folly island, one of the numerous small hammocks having a beach, lying between Tybee and Warsaw islands. Until 1914, this island, which is not easily accessible, had not been visited by any local ornithologist in a number of years. With hopes of finding a few pairs of birds nesting there Mr. Perry and I visited it on May 17 of that year. However, its sharply sloping, semicircular beach was deserted, indeed the only wild life that we saw upon the entire island was a number of young Marsh Rabbits (*Sylvilagus palustris*).

Rynchops nigra — Black Skimmer.

I have been unable to find the breeding grounds of this species on the coast of Chatham county. I doubt if it now breeds here, although it certainly did in considerable numbers fifteen or twenty years ago. T. D. Perry informs me that he has taken its eggs on Pelican Point, a key lying some distance off the south end of Tybee island. Unfortunately, Mr. Perry's note books containing data on this species have been misplaced, and he is unable to furnish me with dates. The tides now daily cover Pelican Point, resulting in its almost total disappearance. Of interest to me since the commencement of my study of ornithology on the coast of Georgia is the rapidly changing aspect of the sand banks that stretch in almost unbroken succession from the south end of Tybee island to Beach hammock in Warsaw sound, a distance of five miles. The periodical building up and disappearance of these banks undoubtedly accounts for the scarcity and non-breeding on this coast of this species, as it is unable to establish itself. Every summer I see a few

Skimmers on these banks, but they certainly do not breed there. Mr. Perry informs me that on Pelican Point the eggs were deposited upon the bare sand, the birds often breeding in close proximity, sometimes only two or three feet separating some "nests." The eggs were oftenest four in number, although frequently only three were laid, and occasionally sets of five were found. The ground color is creamy white; occasionally pure white, although this may be due to fading as this description is taken from specimens in the collection of Mr. Perry. The markings vary greatly, but the average egg is heavily spotted and blotched with blackish-brown; the spots are usually of irregular size, but always quite sharply defined, and are generally well distributed over the surface. The eggs average 1.75 x 1.35 in size.

These birds are very active during the early morning hours, feeding in the shallows of Tybee inlet as well as the larger rivers flowing into it. On May 17, 1914, T. D. Perry and I visited Folly island in quest of eggs of the Least Tern (*Sterna antillarum*), this trip being referred to in the account of that species. In order to gain access to this island it was necessary for us to either go outside and row a considerable distance through the breakers or await a high tide and laboriously push our boat through a long four foot wide canal that had been dug by trappers. We chose the latter route, and arriving at six p. m. of the 16th near the head of this canal we found that we would be compelled to camp upon a nearby small hammock until three a. m. when the canal would contain sufficient water to float a boat. After many difficulties we finally gained the river at the mouth of which lay our destination. The first gray streaks of dawn were just appearing in the east when the Skimmers made their appearance on the river, skimming the surface of the water often only a few feet from our boat. With the rising of the sun the birds deserted the river and retired to the outlying sand bars, there to stand and sun themselves for long periods. Although when resting they strictly confine themselves to the outer sand banks, at rare intervals I have seen individuals alight

on the mud flats closer inshore. This species apparently is becoming more and more uncommon on this coast, and a few years will no doubt see its total disappearance.

Anhinga anhinga — Water-Turkey.

Undoubtedly this curious bird once nested in considerable numbers in this county. The degree of its abundance now however can best be expressed by the term "sparingly and locally distributed." The extensive and splendid system of drainage inaugurated in the county some years ago has almost completely obliterated the former haunts of the Water-Turkey. As it is eminently a fresh water species, the draining of the ponds and swamps has forced it to seek nesting places elsewhere. T. D. Perry informs me that several years ago a friend of his secured several sets of eggs near Burroughs, a station on the Atlantic Coast Line railroad eleven miles southwest of Savannah. The birds were nesting in willows growing in an abandoned rice field reservoir.

The nest of the Water-Turkey is usually placed at low elevations but always over water. The eggs, usually four in number, are deposited the first week in May. According to my observations made at other points on the coast of Georgia, isolated nests are more often found, and even at localities where the species is abundant, the birds do not breed in large colonies, six or eight pairs being the most that I have observed nesting in close proximity. The nest is composed of sticks and is generally of large size, often measuring eighteen inches in diameter. The depression, however, is slight, sometimes imperceptible. Eggs, bluish white, covered with a rough chalky or calcareous deposit. They measure, on an average, 2.20x1.25.

These birds spend much of their time feeding in isolated ponds in which there is an abundant growth of aquatic vegetation. They prefer such bodies of water that are surrounded by heavy forests, although they frequent in considerable numbers the almost treeless fresh water marshes and abandoned rice fields if containing a good depth of water. I never saw one seek safety by skulking

in the dense vegetation. They depend, as far as my observations go, upon their swimming powers, or else take wing; usually the latter. They generally swim with the body wholly submerged, only the head and long neck showing above water. They are at all times very shy and retiring, and, occurring as they do only in the wildest and most thinly settled localities, are every year being pushed further away from this section by the draining and cultivation of their retreats.

Aix sponsa — Wood Duck.

No more fascinating scenes of natural beauty are to be found anywhere in the south than those presented to view at each turn as one travels up or down the sinuous course of the Ogeechee river from its mouth to the northwest corner of Chatham county. At many points along this stretch the river overflows its banks on both sides, the water reaching far back into the heavy deciduous forests, forming perpetually flooded swamps, most of which are impenetrable. Long stretches of the river are bordered by great trees drooping under their gray burden of tenuous moss, their foliage dipping into the black water which is rendered apparently darker by the shadows cast by the fringe of trees. At numerous points high, sandy bluffs, almost bare of vegetation take the place of the gloomy swamps. Here and there along the banks ancient stumps protrude, and in many places abandoned rice plantations stretch for miles along either side. The wooded portions of the swamps bordering this river are the home of the beautiful Wood Duck, which, while it formerly occurred in large numbers, is now so rare that it is only occasionally met with. I can say nothing of its habits during the breeding season from personal observation; furthermore I am not aware that its eggs have ever been taken in the county. However, T. D. Perry tells me that he has seen young at several localities, both in the nest and following the parents, although not recently, since the species is now nearly exterminated. He says the birds always built their nests in hollows in tall trees growing in or very close to

water, to which the old birds transported the young in their bills. He has seen young very early in April but a few days old. After they are hatched the adults lead them to nearby rice field reservoirs, where they remain until nearly grown when they return to the heavy timber along the streams.

Ixobrychus exilis — Least Bittern.

The data that I have secured on the nesting habits of this pecies is very meager. It is a summer resident only, but on account of its retiring habits the times of its arrival and departure are not well known to me, and the fact that it breeds in the county has only recently been ascertained. In 1915 I accompanied G. R. Rossignol and Frank N. Irving on a visit to Ossabaw island. We landed on the north end in the late afternoon of May 10, and the following five days were devoted to a study of the bird life of the island. Our attention was directed particularly to the long established colony of herons in which a number of pairs of the now rare Egrets (*Casmerodius egretta*) and Snowy Egrets (*Egretta candidissima candidissima*) had found refuge. This rookery is in a large fresh water pond in which we spent two days full of interesting experiences.

Situated in the middle northern portion of Ossabaw island, a coast island nine miles long and five miles wide at its widest point, this pond, created by the flow from an artesian well, annually furnishes a winter home for wild fowl and a summer home for many species of water birds, besides those land birds partial to such an environment. Its area covers very nearly two acres, although about one-third of it apparently is unsuitable as a nesting environment for any species of bird except Red-winged Blackbirds (*Agelaius phoeniceus phoeniceus*) which were present everywhere in the pond. This portion is the marginal strip and is about fifty feet wide. Beginning at the edge of the pond and extending toward its center for a distance of approximately one hundred and fifty feet there are dense growths of cat-tail flags, wampee and pond lilies, interspersed with small patches of saw grass. Each of these species of vegetation grows in separate and well de-

fined areas, although no one of them is restricted to any particular section of the pond. They together cover its entire area with the exception of a few open spaces of deep water in the center. As this is neared the vegetation lessens in density, and willows, none over ten feet in height, and seemingly insecurely rooted in the soft ooze, make their appearance. In summer these frail trees are taxed to their limit to support a burden of nests of six species of herons. The surface of all areas of open water is covered with a species of pond weed pea green in color. At first glance this greenish growth appears to be that which collects upon the surface of stagnant water, but such is not the case. An examination failed to disclose any outlet to this pond. The fact that the water is clear and nowhere stagnant would seem to indicate that there is an outlet which we overlooked; indeed, when it is understood that a large volume of water from the well daily flows into the pond, it can readily be seen that it is necessary that there be an outflow, since the water retains some of its original purity. Immediately surrounding the pond are narrow fringes of stunted oaks of several species, and a few rods further back begin coniferous and deciduous forests that extend for several miles in all directions.

Our first exploration of this pond was made afoot on May 11, the day after our arrival on the island, in a heavy downpour that continued throughout the day and night and well into the following day. We had as companions, in addition to the birds, swarms of Cotton-mouthed Moccasins and a number of alligators, the latter mostly of small size. We encountered no water over four feet in depth, and wading in the open pools, while extremely unpleasant in the continual downpour, was not attended by great difficulty or danger. Our progress through the dense masses of vegetation, however, was slow and difficult, for in their recesses lurked many poisonous moccasins for which it was necessary that we be ever on the alert. On the 14th, through the courtesy of Mr. Sasser, the overseer of the island, we were enabled to avoid a second exploration on foot. Mr. Sasser kindly allowed us the use of his horse

and wagon to haul a light skiff to the pond, a distance of four miles from his house, at which we were staying. Launching the boat through the dense vegetation, a distance of over one hundred feet, was exceedingly difficult. The weather however was fine, and every minute of our stay in the pond was used to advantage. Although our second visit was unproductive of finding nests of species additional to those noted on the 11th, we did secure much further data on the nesting habits of the herons, some of which will be given in the sketches of the various species.

Two nests of the Least Bittern were found in this pond; one on the 11th, containing three heavily incubated eggs, and one on the 14th containing one egg. These nests were built in cat-tail flags and were composed of the dead stalks and blades of the different species of vegetation growing in the pond. They were placed only a few inches above the surface of the water and were well concealed, the tops of the flags rising two or three feet above the water. They were simply shallow platforms, apparently hastily constructed, the depression being barely noticeable. The set of three eggs collected is now in the collection of G. R. Rossignol. They are pale bluish white and average 1.25x.90. I believe that Least Bitterns breed in considerable numbers in this pond, but on account of the rank growth of vegetation covering nearly its entire area I was unable to explore it thoroughly and only the two nests mentioned above were found. I very rarely caught sight of one of the birds, so successful were they in hiding in the tall reeds.

Only a small percentage of the Least Bitterns that migrate along this coast remain in this section to breed. In both spring and autumn numbers of them frequent the salt marshes, becoming very active at night-fall. I doubt if any of the few pairs that remain here to breed ever nest in these marshes, but retire to the isolated fresh water ponds on the larger islands, where they are seldom molested.

Ardea herodias — Great Blue Heron.

This picturesque bird is moderately common but

breeds only in the heavily forested areas of the larger coast islands. I am informed that it formerly bred in some numbers on Little Tybee island. The huge nests were placed near the extremity of the topmost limbs of giant short leaf pines and most of them were inaccessible. I am not aware of the present location of any heronies; indeed this species has long since ceased to breed in any numbers in this vicinity, therefore I am unable to offer much information concerning its nesting habits. With its behavior in autumn and winter upon its feeding grounds in the marshes and on the mud flats I am better acquainted, since it is much more abundant, or apparently so, during the above named seasons. I find it to be, as a rule, very shy and ever on the alert, which is really surprising, in view of the fact that it has so few enemies to contend with.

The greater portion of its food is secured from the salt marshes and the banks and shallows of the numerous creeks that wind their way through them. It is often seen in company of the smaller herons, particularly the Little Blue species. At such times it is the first to take wing at the approach of danger, and usually is far away before the intruder has arrived within a hundred yards of the spot where it stood. Upon stationing itself in a shallow creek to secure passing fish, if the latter are scarce the bird will remain motionless in one spot for a long period of time; apparently sluggish, and in an indifferent attitude; but when fish are plentiful, it becomes very active, spearing them right and left in rapid succession.

At sundown, or a little before, numbers of these stately birds can be seen slowly winging their way toward the forested portions of the islands, there to spend the night. They become much attached to these roosting places and will not desert them as long as their aspect remains unchanged and the birds are not greatly persecuted.

Casmerodius egretta — Egret.

Of all the herons which nest in this county this species is the most beautiful and interesting, as it is the least abundant. The very few pairs that are left to breed un-

molested are confined to a fresh water pond on Ossabaw island, or at least apparently so, as I am not aware that it is known to nest at any other locality in Chatham county. The number of pairs which were breeding in this pond was not accurately determined during my visit to Ossabaw island in May, 1915. I saw ten or a dozen birds, and allowing for those which were temporarily absent from the rookery, I believe the number of pairs is very close to the former figure. The nests were built in willows, usually at a point where several stout limbs converged, and were bulky platforms of twigs loosely laid together. They were placed at heights ranging from two to ten feet above the surface of the water. All of the nests which I examined contained three eggs and the sets which were collected were about six days incubated. These herons were very shy, leaving their nests before I had approached to within two hundred feet of them, and would not return to them so long as anyone remained in the pond. However, no difficulty was experienced in determining which nests belonged to this species, as its eggs are unmistakable, being considerably larger than those of any other heron nesting in this pond. They are bluish green in color and measure 2.25x1.50.

Information secured from T. D. Perry, whose collecting activities extend over a period of nearly forty years, tends to convince me that this species never nested in this section in large colonies such as formerly occurred in Florida and along the Gulf coast. The absence of fresh water reservoirs, to which it was almost exclusively confined during the breeding season, evidently was the main cause of its comparative scarcity. Its numbers have been much reduced in recent years, and it is now threatened with extinction. Because of the rarity of this species and the next it has not been possible for me to determine the times of their arrival and departure. However, they are summer residents only.

Egretta candidissima candidissima — Snowy Egret.

Between eight and twelve pairs of these lovely birds

were nesting in the pond on Ossabaw island at the time of my visit there in May, 1915. Because of the similarity between their eggs and those of some other species of herons breeding there, it was not possible for me to accurately determine which nests belonged to these herons except by remaining concealed until the birds had settled on them. This required considerable patience, as, although they were not as wary as the larger Egrets, after I had entered the pond and frightened them from their nests, long waits in concealment were necessary before they would return. All of the nests that were identified were built in willows in which were placed many nests of the other species of herons which were breeding in the pond. They were simply rudely constructed platforms of twigs loosely arranged in a circular manner. The eggs were three in number, bluish green in color. They measure about 1.80x1.25.

I made a number of efforts to determine the character of the food of this species, but the data secured is meager, due chiefly to the difficulty in approaching the birds close enough for satisfactory observation. Besides this the very few pairs nesting in the pond distributed themselves, when feeding, over the large swampy and marshy areas on the island, and were rarely encountered. The limited notes secured lead me to believe that a considerable percentage of their food consists of crawfish, while individuals were detected on several occasions catching small fish swimming near the banks of the small creeks.

This species does not breed at any other locality, although suitable ponds exist on some of the other large and isolated islands. During the past ten years this species has rapidly decreased in numbers and it is now rare in this county.

[TO BE CONTINUED]

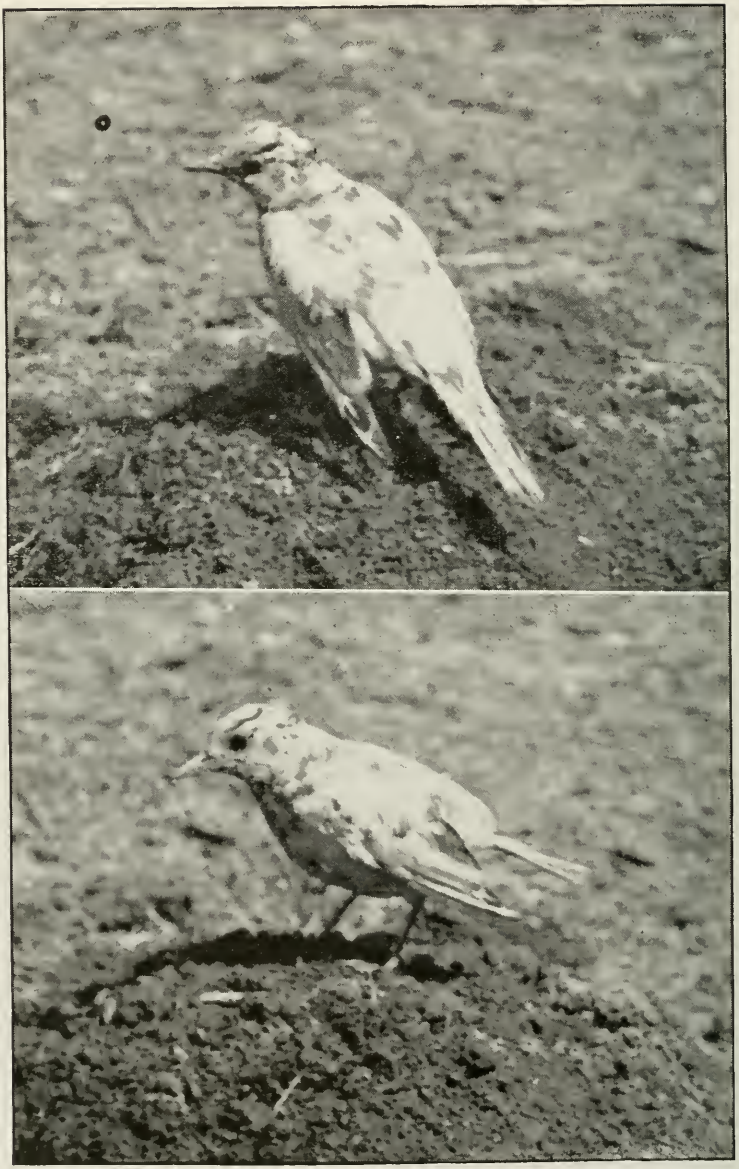
AN ALBINISTIC ROBIN

ALVIN R. CAHN

While albinism, or a tendency toward albinism in birds is common enough to have supplied most museums with stuffed or mounted specimens showing varying degrees of whiteness in many species, it is rare enough to have escaped the efforts of most of the hunters who have substituted the camera for the gun. It is for this reason, and not because albinism is a rarity, that the two accompanying photgraphs of a strikingly albinistic robin are offered.

This robin appeared on the campus of the University of Wisconsin on March 5, 1917, and remained there during the entire summer, in spite of the fact that it was among the very earliest of the robins to return in the spring. An examination of the photographs will show that the bird is fully 85% white. Those pigmented feathers which were present were for the most part normal in color, though the few brown feathers on the breast were somewhat pale in color, and the bill and legs were nearly white. The bird was a female and was seen to mate with a normal male. Two unsucecssful attempts were made to nest. The first nest contained five eggs, the second four. Both were deserted for some unknown reason before the incubation period had expired. A subsequent examination of the eggs showed three of the second batch fertile, and two of the first.

Texas A. and M. College,
College Station, Texas.



AN ALBINISTIC ROBIN

THE WILSON BULLETIN

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Additional comment on the annual meeting after the reading of the report of that meeting by the Secretary seems almost superfluous. But the writer has followed the course of the Club from its beginning, and he may, therefore, be permitted to remark that this meeting left him with the conviction that whatever of uncertainty there may have been in the past about the continued functioning of the Club its future is now secure. Such a spirit of good fellowship, mutual understanding of differing points of view, and such earnestness in the work of accumulating facts relating to our particular field of endeavor can mean nothing else than increasing value of the results of our work. And let us begin now to plan to make the next meeting better than our best so far.

The creation of a board of coöperating editors was one of the most significant and valuable actions of the last meeting. This first number of the new volume illustrates this point. It not only lightens the task of editing but insures material of a higher character to choose from, and adds a more personal touch to our journal. Each of these coöperating editors would ask for your coöperation in securing material for publication. This is probably even more true of the Secretary, upon whom falls the task of preparing the more personal material. You would be doing him a service of you would not wait for him to ask you for items of interest, but would keep him informed of trips or journeys which you have planned, or any such which you know others have in contemplation. You would also be doing the readers of the Wilson Bulletin a service, because everybody wants to know what is going on in the way of bird study.

It was voted to advance the subscription price of the Wilson Bulletin to $1.50 a year to non-members. All members, whether Associate or otherwise, receive it free, if their membership dues are paid up. This action was necessary because the cost of four numbers exceeds a dollar, and because there is no immediate prospect of any material reduction in the manufacturing costs in the printer's trade. It is true that there has been a small decline

in the price of paper, but paper is a small item in the cost of manufacturing printed matter.

Your special attention is called to the statement of the Committee on Ways and Means, in this column. Parallel with this effort of this committee is that of the Secretary, with his teams of helpers, in soliciting new members. Upon the response to these efforts depends to a large degree the character of your official organ. Present expectations of income make possible a 200 page volume with a few illustrations. A 50% increase would mean a 300-page volume, with more illustrations, including at least two colored plates. If every member should get one new member this would be accomplished. Haven't you some friend who ought to become a member, and probably would if you asked him to?

From the Ways and Means Committee.

Your Ways and Means Committee would like to make a brief statement to the Club on its recent activities. In response to the circular letter sent out to the membership under date of January 25 $232.00 has been received to date, from which $13.00 must be deducted for expenses We wish to thank the contributors for their generous support. In due time the money will be turned into the treasury of the Club and applied to the expense of publishing the Bulletin. The fund will be held open for a while longer, so that those who desire may still send in contributions. The Club is conducting a well organized drive for increasing the membership. A larger and better illustrated Bulletin will help greatly in this enterprise, and conversely, the larger membership will support the better periodical. Your contribution is asked at this time to help bring about this happy equilibrium.

Those who do not wish to make direct contributions are invited to accept classification as active or sustaining members. If a considerable number of associate members would volunteer to become active members the increased income from the dues would make a great difference in the Club's budget. Any associate or active member will likewise be welcomed as a sustaining member. Concerning these changes in classification please notify the secretary, Mr. A. F. Ganier, 2507 Ashwood Avenue, Nashville, Tenn., or the treasurer, Mr. Geo. L. Fordyce, Youngstown, Ohio.

Respectfully,

B. R. Bales.
M. H. Swenk.
T. C. Stephens.

March 1, 1921.

FIELD NOTES

An Albino Goldfinch.

During August, 1915, I observed an albino bird a few miles west of McCook, Neb. By following the bird, observing it with glasses, and observing its flight I identified it as a goldfinch. Having never seen the record of an albino goldfinch I consider this worth while reporting. There seemed to be no color in any of the plumage.

David C. Hilton.

Notes from North Carolina.—A Tree Sparrow (*Spizella m. monticola*) came to my feeding station on January 27 and stayed through January 30. This was following a heavy snowfall for this region on the night of the 25th. The tree sparrow has been recorded but rarely from the mountains of North Carolina, and once from Chapel Hill, near the center of the state. While this was only a sight record I feel sure of my identification, for I was perfectly familiar with the bird in northern Ohio, where it was one of the commonest winter birds, and this specimen was observed on several occasions at less than six feet.

According to Pearson, Brimley and Brimley, "The Birds of North Carolina" (1919) the Starling (*Sturnus vulgaris*) has not yet been recorded from North Carolina, although it has been recorded from Newport News, Va. It seems worth while, therefore, to record the following note. Messrs. R. W. Collett and W. F. Pate, while hunting near Willard, N. C., about December 19, 1919, saw a flock of three strange birds and shot into the flock, securing one specimen, which was brought to me for identification, and which proved to be a Starling. This specimen is now preserved in the North Carolina State Museum. Willard is located about 33 miles due north of Wilmington, N. C.

Z. P. Metcalf.

West Raleigh, N. C.

Do Birds Remigrate?—Living as I do so near the border land between Northern and Southern bird conditions, I am led to believe that there is an extensive intermigration among certain species of birds in winter and early spring. a bridght day in winter I have often seen 75 to 100 Robins, while after a severe storm I would not see even one for two or three weeks. The Bronzed Grackle does not remain here through the winter, but is very abundant at Nashville, Tenn., only 75 miles south of here.

Ordinarily it appears here in numbers by February 15 to 22, the earliest record I have being February 8. In the spring of 1920 the grackles were plentiful by February 26, when the coldest weather of the season came, lasting until March 8. I am strongly inclined to believe that they remigrated, for in that time only two or three were seen, and they did not again become common until March 12.

I have never noticed this condition about the birds which come in late March or the early days of April. Regardless of Easter storms, late snow flurries, or long-continued cloudy, cold weather, the Chimney Swift and Purple Martin stay, even though I fear they often approach starvation.

GORDON WILSON.

Bowling Green, Ky.

Freakish Nesting Habits.—Of the 45 or 50 birds which are regular summer residents here four or five have odd habits choosing sites for nesting. While the migration is on I have found a few Prairie Warblers in several localities in the territory I have studied, a circle about eight or nine miles in diameter, with Bowling Green as its center. In nesting time, however, I have never been able to see the Prairie Warbler outside of a little side valley opening into the valley of the Big Barren River and about three miles from town. Many other places around here have the same general characteristics: shrubby fields, brier and honeysuckle tangles, with wooded hills in the background, but no other place seems to please the Prairie Warbler.

The Bachman Sparrow is a little less choice about its nesting grounds, but I have been unable to find it in the nesting season except in three places, two of them fairly near each other, but more than three miles from the other one.

The range of hills overlooking the valley where the Prairie Warbler nests is the only breeding ground I know of the Kentucky Warbler, though there are dozens of hills near here very similar to this range.

Another bird which belongs to this group is the Oven-bird, which is confined to the range of hills mentioned above, and another, three or four miles from the first and across the river from it.

This season I intend to investigate this as one of my problems and hope to arrive at some conclusions concerning this unique habit among these species.

Bowling Green, Ky. GORDON WILSON.

Notes from Lake County.—I am pleased to record an occurrence of the Double-crested Cormorant on October 9, 1920. As I

mounted the stones of a breakwater at the lake and looked down on the other side, I was surprised beyond measure to see an immature of the species seated on one of the lower stones just below me. After a sufficient study of the bird I had a difficult time in driving it far enough out into the lake to have it escape the shot of the first hunter that happened along, as its perch was not twenty feet from shore. Looking back afterwards I saw it swim back and fly up to its original rock. Later on some fishermen succeeded in driving it far out on the water, and as it could not be located the next morning, I trust it escaped the fate usually meted out to any large or strange bird.

On August 10, 1920, while watching the Bronzed Grackles winging leisurely along to their roost in long extended flocks of hundreds, and the Cowbirds in swifter, undulating bunches like bands of galloping outlaws, a bunch of twenty "black birds" passed by whose short tails, swift flight and perfect unison of movement of the members of the flock made me at once suspect them to be Starlings. Visiting the roost itself an evening or so later a few were seen and readily identified, but I find it difficult to approach the more easily frightened Starlings among the thousands of Grackles and Cowbirds. Early in October I tried the expedient of climbing a tree in the roost and looking down upon the thorn trees as the birds settled in for the night. This was highly successful and I got excellent views of many of the birds, now in winter plumage. Towards dusk, when patterns were more obvious than colors, the Starlings had a striking resemblance to undersized Flickers. This was also remarked upon later by a friend who also visited the place. It was impossible to obtain any exact count of their numbers, but there were surely between fifty and one hundred; which seems to say that the day is not far distant when the Starling will be a common Ohio bird.

E. A. Doolittle.

Painesville, Ohio.

Fall Migration in Northwestern Nebraska in 1920.

With a view to continuing the observations on the fall bird migration begun in September, 1919, in northwestern Nebraska, Mr. C. E. Mickel and the writer returned to the Monroe Canyon region of Sioux county, Nebraska, on September 26, 1920, and remained until October 9. During this period sixty-one species were recorded. Since only sixty-eight species were recorded the preceding year during the more favorable season, September 6-20, we considered the list rather good. Some of the more interesting observations follow:

Mountain Plover: On September 27, while crossing a strip

of badlands north of Monroe Canyon our attention was suddenly arrested by a Mountain Plover standing motionless on the bare ground near our pathway. The bird harmonized so remarkably well with the pallid, buff-colored soil that we congratulated ourselves upon having discovered it. Doubtless depending instinctively upon its resemblance to its surroundings for protection, the bird remained absolutely motionless as we approached. Since there are but a few definite records of this species for Nebraska the specimen was collected.

Red-naped Sapsucker: A specimen was collected on September 29, and oddly enough, from the identical tree, an old boxelder, that yielded the state record specimen which was taken the year before and recorded by Mr. Mickel in the September, 1920, number of The Wilson Bulletin. A second individual was noted on October 4.

Lewis Woodpecker: It has been the privilege of the writer to spend from two to three weeks in camp in the Pine Ridge Region of northwestern Nebraska for several years, namely, 1905, 1908, 1911, 1912, 1913, 1919, and 1920, with the seasons varying from June 15 to October 9. On all of these trips at least a part of the time has been devoted to bird study, but not until the past season did he succeed in finding the Lewis Woodpecker. On September 29 a family of six or seven birds was observed among the pine trees at the head of Monroe Canyon. While possibly a common migrant and winter visitor, the Lewis Woodpecker probably does not nest as commonly within the state as we have supposed.

Clarke Nutcracker: A single specimen was noted on October 6.

Sparrows: The sparrow migration was both a surprise and a disappointment, not only because of the small number of species present but because of the relative scarcity of individuals. The species noted were as follows: Western Vesper Sparrow, fairly common; Harris Sparrow, a single specimen seen October 3; White-crowned Sparrow, one seen September 30; Gambel Sparrow, the prevailing species, seen nearly every day; Western Chipping Sparrow, fairly common on the pine-covered bluffs; Clay-colored Sparrow, noted on four different days, one or two birds at a time—a striking contrast to the great abundance of this species in the same locality the preceding year in middle September; Lincoln Sparrow, two individuals noted, one on the 4th and one on the 5th of October. Like the sparrows Juncos were surprisingly scarce, although several species were noted, namely, White-winged, Slate-colored, Shufeldt and Pink-sided.

Western Tanager: A few Western Tanagers lingered until October 1, which seemed to us a very late date.

Warblers: Two interesting warblers for a locality so far to

the west were noted, the Black-throated Blue on October 6 and the Black-throated Green on October 8.

Sprague Pipit: This species is regarded as sufficiently uncommon in Nebraska as to make the collection of a specimen on October 1 seem worthy of note.

Sage Thrasher: A single specimen was seen and collected in the sage brush a few miles north of the mouth of Monroe Canyon on September 27. But few definite records of the Sage Thrasher are at hand for Nebraska, but it is believed to occur regularly in small numbers in the badlands of Sioux county.

R. W. Dawson.

Lincoln, Nebraska.

The Present Status of the Whooping Crane.

There seem to be no published records of the occurrence of the Whooping Crane since the note recording the taking of specimens at Wood Lake, Cherry county, and Grand Island, Hall county, Nebraska, was published in The Auk, 1913, page 430, by the writer, hence the following notes possess considerable interest, especially as the suspicion has been expressed that possibly the species had become extinct.

On March 29, 1919, a small flock of Whooping Cranes was seen near Kearney, Buffalo county, Nebraska, on an island in the Platte river. In company with Mr. C. A. Black of Kearney, the writer interviewed the observers, who are wholly to be relied upon, a few hours after the birds were seen. The "white cranes" (= Whooping Cranes) were in a large flock of "blue cranes" (= Sandhill Cranes), but had departed upon our reaching the place late in the same day, though most of the smaller species remained. In the spring of 1920, Mr. C. A. Black, who is an able and wholly reliable field ornithologist, saw two Whooping Cranes in a flock of Sandhill Cranes flying northward at a considerable height, at Kearney, on April 2, and on April 14 he saw a flock of 56 Whooping Cranes at the same locality.

Since the publishing of the 1913 note above referred to, there have been several Whooping Cranes killed in Nebraska, according to reports. On March 10, 1915, one was killed at Ogallala, Keith county, and is now in a private collection at that place, and in the fall of 1915 two were shot on the Platte River in Hall county, north of Prosser, but were destroyed by fire in 1917; in the spring of 1917 one was shot near Minden, and is in a collection there, and in the fall of that year it is reported that three were killed near Kearney (by a hunter who buried the birds through fear of the law) and another along the Platte, somewhere near its mouth; finally, in the spring of 1918 six were seen on the Platte river near Kearney, by a very reliable hunter, who, to his credit, abstained from

killing any of them, while others were reported as seen in the fall of that year. In the case of birds killed since the approval and promulgation of the Migratory Bird Treaty Act it has not been possible to get any reliable information about specimens reported to have been taken.

Myron H. Swenk.

Lincoln, Nebraska.

Nesting of the Red Crossbill in Nebraska.

On March 28, 1920, Messrs. Miles Greenleaf and William Marsh, both of Omaha, found a nest of the Red Crossbill in Elmwood Park, in the western part of Omaha. The nest was in the crotch of a decayed boxelder tree in a well-protected ravine at a height of about twenty feet from the ground. The female crossbill was on the nest, evidently brooding, and the male bird was feeding her. The tree was too badly decayed to permit climbing, but the identification of the bird was beyond question, inasmuch as Mr. Greenleaf is an experienced bird observer, and the birds were watched carefully from a short distance. There were no conifers within 300 yards of the nest. Mr. Greenleaf notified the writer of his find on March 30 and plans were made to visit the nest, and if possible, to obtain some photographs of it within the next few days.

But on April 3 an unseasonable blizzard raged over eastern Nebraska, and it was evident that the trip would need to be postponed. Messrs. Greenleaf and Marsh, however, revisited the nest on Easter Sunday, April 4, and found the storm had wrecked the nest, leaving about half of it clinging in the crotch of the tree. As several inches of snow lay on the ground beneath the tree the fragments of any eggs that might have been in the nest could not be found, nor were they to be found later, after the snow had melted. The birds were still in the vicinity after the storm, and especially around the place where the nest had been, but no rebuilding of the nest was subsequently observed.

The disappointment of not having secured any tangible evidence of this nesting, which was the first record of the breeding of this bird in Nebraska, had scarcely subsided until information was received (on April 26) concerning another nesting, this time in a park in the little city of Broken Bow, Custer county, in the central portion of the state and near the eastern edge of the sandhills. This nest was found by a fourteen-year-old boy, Newell F. Joyner, and his mother, on March 20. This boy is a Boy Scout and keeps a record of the birds of his locality, so he is positive of the date. The nest was in a very open and exposed place in the park, in the crotch of an elm tree, about ten feet above the ground and directly above a side-walk. There are very few conifer trees in Broken Bow. The nest was not disturbed, and the female was ob-

served sitting upon it for several days before she was picked up dead by some children. The male had not been seen for several days before the death of the female.

Master Joyner has written some interesting facts about this nest. He says: "The female is the worker, building the nest all by herself, the male seeming to be the protector, flying with but just a little way off from the female. . . . There were two eggs in the nest, one of which had a hole in it and broke when it was touched. Due to the weather the other egg was frozen, but it soon thawed out and cracked. We saved the pieces."

The crossbills had been noted for some time before their nesting was observed, and on February 15, just after a heavy blizzard, a dead male crossbill was found. Later another dead male bird was found by some children, possibly the nesting male, and finally the nesting female, on the day that the deserted nest and eggs were collected. No injury was noticeable on the bodies of any of these birds thus found dead.

It is unfortunate that none of these dead crossbills were preserved, for it is yet an open question whether this record concerns the Eastern Red Crossbill (*Loxia curvirostra minor*) or the Rocky Mountain Red Crossbill (*L. c. bendirei*), which, by the way, is an excellent subspecies and should be recognized as such by the A. O. U. Committee. The Rocky Mountain form abounds in the Pine Ridge of northwestern Nebraska in winter, and may be found there in some years in the summer also, but has not been found nesting. During the winter it occurs more or less commonly over the entire state. The Eastern Red Crossbill we have found only in the late fall, winter and early spring in the eastern part of the state, though in some seasons very commonly.

The nest, along with the fragments of the egg which was frozen and broke on thawing, was presented to the Nebraska Ornithologists' Union collection by Master Joyner, who is entitled to credit for his valuable observations and willingness to place his find where it will be permanently preserved. I am also indebted to Mrs. Frances C. Morgan, a neighbor of Master Joyner, for having first acquainted me with the fact of the nest and for corroborating the above statements and the identification of the birds.

Myron H. Swenk.

Lincoln, Nebraska.

Some Nelson County, Kentucky, Notes, 1920.

Worm-eating Warbler (*Helmitheros vermivorus*). Several of our ornithologists state that the song of the worm-eating warbler is somewhat similar to that of the chipping sparrow, and many a time I have hunted out a singing chippie at the edge of some thicket, or woods, half expecting to find this woodland warbler, but

invariably it proved to be the sparrow, and not the much-sought warbler. On the morning of July 11 I was rambling in the woods bordering the Beech Fork river, about three miles southeast of Bardstown; my course led me up a small stream bordered by deep thickets that extend along its banks from its confluence with the river for half a mile toward its source. I was walking slowly, occasionally gazing into the tree tops as I listened to the queer grating song of the Cerulean warbler. Perceiving an unknown warbler that was quietly hopping about among the branches of a sycamore tree, and in easy range of my collecting gun, I fired and brought it down. It was an adult worm-eating warbler, the first I had ever found in this locality. Though having taken the bird I was none the wiser as to its song, but it was a new species for my local list, and that was some satisfaction. Charles W. Beckham lists thirty-four members of the warbler family in his Birds of Nelson County, but he never found the worm-eating warbler here.

House Wren (*Troglodytes aedon*). Another new species for this locality is the house wren, which was observed on two occasions in May of this year. On the 8th of the month I was afield in one of my favorite stamping grounds about two miles southeast of town; everywhere birds were singing and all voices were familiar except one that seemed to come from a brush-heap at the edge of a cedar thicket. I had little trouble locating the singing bird, but it was some minutes before I could get a glimpse of it, so well did it remain concealed in the brush. Finally it hopped to the top of the pile to deliver its tinkling, bubbling, song and at once I recognized it as the house wren. Watching it for some time I was able to get several good views of it, thereby making identification certain. Four days later, May 12, I again observed a house wren, in an old rail fence near a house, in the same locality. This one was not singing, but from the lateness of the season I had some hopes of its breeding in the neighborhood. However, nothing more was seen of it and I suppose it was only a very late migrant. For many years I have looked for this wren, but always my search had been in vain. Bewick's wren is the species commonly breeding about town, though a few pairs of the noisy Carolina wren share town life with them.

Mockingbird (*Mimus polyglottos polyglottos*). Ten years ago this bird was one of the most common of the summer residents, a few wintering. In summer every farm had one or several pairs, and many nested in favorable places about town. For the past several years they have been noticeably decreasing in numbers, and where they were formerly numerous, the past summer they were scarce or entirely absent. In looking over my field notes for the past season I find that the mockingbirds seen during the summer would not have represented more than three or four pairs of nest-

ing birds, whereas, ten years ago twelve or fifteen pairs would have been found in the same territory. Several years ago it was a common thing to find mockinbgirds that had been taken at an age when about to fly and confined to a cage as pets. However, this practice is not so common now, and possibly when it existed it had but little effect on the number of mockingbirds as a good many of these birds picked up from the ground undoubtedly would have been caught by cats, or destroyed in some other way. In 1885 Beckham wrote concerning this bird in this locality: "Ten years ago they were comparatively rare here, but now there are few gardens or yards where one or more pairs do not nest." At present the order of this statement is reversed, and now the status of the mockingbird for this vicinity should read—Ten years ago they were common, now they are comparatively scarce.

BEN J. BLINCOE.

Bardstown, Ky., October, 1920.

A One-Day List of Birds at East Falls Church, Virginia.

By Ira N. Gabrielson

During the spring of 1917 the writer lived at East Falls Church, Va., on a small suburban place of one and one-half acres. This place was covered by a heavy growth of jack pines, with a small intermixture of persimmon, oak, hawthorne, and other deciduous timber. The lot across the road was grassland and from it such birds as the meadowlark and grasshopper sparrow came to our yard. During the spring migration it was an ideal place to observe the movements of warblers and other small birds. The height of the migration at this point, at least on the days when I could be present, was on May 19. During the day, beginning at daylight, I saw the following birds on this place:

1. Black-crowned Night Heron—*Nycticoras n. naevius.* Flying over.
2. Bob-white—*Colinus v. virginianus.*
3. Mourning Dove—*Zenaidura m. carolinensis.*
4. Turkey Vulture—*Cathartes a. septentrionalis.*
5. Sharp-shinned Hawk—*Accipiter velox.*
6. Yellow-billed Cuckoo—*Coccyzus a. americanus.*
7. Downy Woodpecker—*Dryobates p. medianus.*
8. Red-headed Woodpecker—*Melanerpes erythrocephalus.*
9. Flicker—*Colaptes a. auratus.*
10. Whip-poor-will—*Antrostomus v. vociferus.*
11. Nighthawk—*Chordeiles v. virginianus.*
12. Chimney Swift—*Chaetura pelagica.* Flying over.
13. Crested Flycatcher—*Myiarchus crinitus.*
14. Wood Pewee—*Myiochanes virens.*

15. Blue Jay—*Cyanocitta c. cristata.*
16. Crow—*Corrus b. brachyrhynchos.*
17. Meadowlark—*Sturnella m. magna.*
18. Baltimore Oriole—*Icterus galbula.*
19. Purple Grackle—*Quiscalus q. quiscula.*
20. Purple Finch—*Carpodacus p. purpureus.*
21. Goldfinch—*Astragalinus t. tristis.*
22. Grasshopper Sparrow—*Ammodramus s. australis.*
23. White-throated Sparrow—*Zonotricha albicollis.*
24. Field Sparrow—*Spizella p. pusilla.*
25. Song Sparrow—*Melospiza m. melodia.*
26. Chewink—*Pipilo e. erythrophthalmus.*
27. Cardinal—*Cardinalis c. cardinalis.*
28. Rose-breasted Grosbeak—*Zamelodia ludoviciana.*
29. Indigo Bunting—*Passerina cyanea.*
30. Scarlet Tanager—*Piranga erythromelas.*
31. Barn Swallow—*Hirundo erythrogastra.*
32. Tree Swallow—*Iridoprocne bicolor.*
33. Cedar Waxwing—*Bombycilla cedrorum.*
34. Red-eyed Vireo—*Vircosylva olivacea.*
35. Yellow-throated Vireo—*Lanivereo flavifrons.*
36. White-eyed Vireo—*Vireo g. griseus.*
37. Black and White Warbler—*Muiotilta varia.*
38. Nashville Warbler—*Vermivora r. rubricapilla.*
39. Tennessee Warbler—*Vermivora peregrina.*
40. Parula Warbler—*Compsothlypis a. americana.*
41. Cape May Warbler—*Dendroica tigrina.*
42. Yellow Warbler—*Dendroica a. æstiva.*
43. Black-throated Blue Warbler—*Dendroica c. cærulescens.*
44. Myrtle Warbler—*Dendroica coronata.*
45. Magnolia Warbler—*Dendroica magnolia.*
46. Chestnut-sided Warbler—*Dendroica pensylvanica.*
47. Bay-breasted Warbler—*Dendroica castanea.*
48. Black-poll Warbler—*Dendroica striata.*
49. Blackburnian Warbler—*Dendroica fusca.*
50. Black-throated Green Warbler—*Dendroica virens.*
51. Oven-bird—*Seiurus aurocapillus.*
52. Maryland Yellow-throat—*Geothlypis t. trichas.*
53. Yellow-breasted Chat—*Icteria v. virens.*
54. Canada Warbler—*Wilsonia canadensis.*
55. Redstart—*Cetophaga ruticilla.*
56. Catbird—*Dumetella caroliuensis.*
57. Brown Thrasher—*Toxostoma rufum.*
58. Yellow-breasted Chat—*Icteria v. virens.*
59. Carolina Wren—*Thryothorus l. ludovicianus.*
60. House Wren—*Troglodytes a. aëdon.*
61. White-breasted Nuthatch—*Sitta c. carolinensis.*

61. Red-breasted Nuthatch—*Sitta canadensis.*
62. Tufted Titmouse—*Bœolophus bicolor.*
63. Carolina Chickadee—*Penthestes c. carolinensis.*
64. Wood Thrush—*Hylocichla mustelina.*
65. Olive-backed Thrush—*Hylocichla u. swainsoni.*
66. Robin—*Planesticus m. migratorius.*

NOTES—HERE AND THERE

Conducted by the Secretary.

Mr. Benj. T. Gault is preparing for the Illinois Audubon Society a "Checklist of the Birds of Illinois." It is planned to have it ready in time for spring migration.

Mr. Fred M. Dille, one of our pioneer western bird men, is in charge of the U. S. Biological Surveys' Niobrara Reservation for Wild Life in northern Nebraska. His postoffice is Valentine.

Hon. R. M. Barnes is piloting the venerable Oologist through its 38th year and expresses confidence in its future. We regret that Mr. Barnes missed the Chicago meeting by reason of getting the dates mixed.

Miss Althea R. Sherman, who in past years has written many valuable articles for the columns of The Bulletin, has of late been devoting her time and talents to securing the establishment of a National Monument park on the Mississippi River, near McGregor, Iowa.

Prof. Horace Gunthorp, formerly of Topeka, Kans., is now with the Department of Zoölogy of the University of Washington at Seattle. In the May, 1920, issue of School, Science and Mathematics, is published his paper on "Bird Study in the Mississippi Valley." In this paper is incorporated an analysis of the distribution of the membership of the three major bird clubs.

Professor Z. P. Metcalf of the North Carolina State College, has been elected Instructor in Ornithology and Entomology at the University of Michigan Biological Station, at Douglas Lake, for the coming session. He will give courses in elementary ornithology and direct the research work in ornithology as well.

Mr. Herbert L. Stoddard, formerly with the Field Museum, is now Curator of Ornithology in the Milwaukee Public Museum. One of the treats in store for our readers is a very thorough paper by Mr. Stoddard treating of the life histories of the Great Horned Owl. Mr. Wm. D. Richardson will furnish some of his excellent photos from life as illustrations.

Dr. L. Ottley Pindar, who wrote of Kentucky bird-life while

at Hickman, Ky., during the late eighties, is now located at Versailles, Ky., having recently received his discharge from the Medical Corps of the A. E. F. Dr. Pindar founded the young Oologists Association, which was the forerunner of The Wilson Club, and with our present Editor, our present President, Past President Frank L. Burns, and others, laid the foundations for our organization. Dr. Pindar is planning to take up more actively his long neglected ornithological work.

The Tennessee Ornithological Society has recently launched The Middle Tennessee Audubon Society and has entrusted to the new organization that portion of its work dealing with bird protection and education.

The Field Museum of Natural History at Chicago will open its doors to the public on June 1, 1921. The structure, which has been many years in building, will be one of the handsomest in the world devoted to museum purposes. We hope to give more details in a later number.

The Oologist Exchange and Mart, a well conducted little monthly published in England by Mr. Kenneth Skinner, is henceforth to be issued quarterly under the name of The Oologists' Record.

Our worthy contemporary, The Condor, is traveling the same stormy financial sea as is The Wilson Bulletin and is going to make the best of it until prices come back. Dr. Joseph Grinnell advises that they are succeeding nicely toward raising an endowment fund, the interest of which will go toward maintaining the publication.

The National Association of Audubon Societies have available for exhibition some wonderfully fine motion pictures of bird life. Those taken along the coast of the Gulf of Mexico and in Florida by Messrs. Finley and McClintock are probably the finest series of motion pictures ever taken of wild birds. Mr. Pearson, for many years secretary of the societies, is now its president, having succeeded the late William Dutcher.

It is a foregone conclusion that as a feature of our next annual meeting the sessions will be so arranged that our members may indulge more lengthily in informal interchange of notes and the making of new acquaintances. When bird students get together the conversation never drags so "talk fests" galore will be in order.

The museum of ornithology of Emory University in Atlanta is now the repository of the fine collections of Rev. Wm. L. La Prade of that city. Mr. La Prade, who is Honorary Curator, is an ardent field worker and is adding new material constantly. A list

of the rarer specimens in the museum is being prepared for publication in The Wilson Bulletin.

Our committee of Ways and Means, composed of Messrs Swenk, Stephens and Bales, are reporting good success toward achieving the results aimed at. There is a strong current of feeling that The Wilson Club shall go forward.

Quite a lot of interest is being attached to the outcome of the work of our two membership teams, which are being captained by Dr. T. C. Stephens of Sioux City, and Dr. Geo. R. Mayfield of Nashville, Tenn. If the members of these teams "acquit themselves nobly" we shall have something laudatory to say of them in a future issue. Aside from their actual results there will be much satisfaction in knowing that the work of the organization is being carried on by many willing hands.

Future meeting places for the Wilson Club are now receiving careful consideration. A most cordial invitation from our Chicago members has been extended and the Windy City bids fair to land the next meeting. Whenever the American Association for the Advancement of Science, with which The Wilson Club is associated, meets within the middle west it is a distinct advantage for us to meet with them. The A. A. A. of S. registration at Chicago was nearly 2500 and many of our members, being connected with other of the affiliated organizations, are thus able to kill two birds with one stone. The meeting places for the A. A. A. of S., thus far chosen, are: 1921, Toronto; 1922, Boston; 1923, Cincinnati; 1924, Washington; 1925 not yet decided upon, but Nashville, Tenn., will make a strong bid for the honor.

The draining of the Florida lakes and Everglades goes steadily on and a consequent diminution of the water-bird life is inevitable. Such species will not adapt themselves to new breeding grounds but will die out like the vast number of water-birds which formerly bred on the western plains. Visitors returning from Florida are predicting that its east coast will finally outstrip southern California as a winter resort. If only from a commercial standpoint, Floridians should conserve their water birds to offset in a way the glories of California's mountains.

The 1920 report of the U. S. Biological Survey is of much interest to ornithologists, mamologists, and conservationists generally. We learn therein that among the publications ready to be issued are three state lists, viz., Birds of Texas, Birds of New Mexico, and Birds of Alabama. Two hundred and fifty observers filled out and sent in the standard migration blanks during the year. Seventy bird reservations are now established, on thirteen of which wardens are maintained throughout the year. Permits for

collecting were issued to seven hundred and eighty-three individuals, from which figure it is evident that "the army of collectors" has dwindled to an almost negligible few.

Although it has been generally conceded that the last wild buffalo had disappeared from the American continent, the Canadian government sent an expedition to investigate the tales told by Indians of a large herd in the remote north. F. H. Kitto of the Canadian Department of the Interior, who headed the expedition, located a herd of approximately a thousand and secured photographs of them. The herd was found in the district south of Great Slave Lake and west of the Slave River. This herd brings the known number of buffalo in North America up to nearly ten thousand.

At the recent meeting Dr. Bales was drawn into relating some of his experiences among the tidal marshes of the Virginia coast, where he is wont to hie himself each June. One day, relates the Doctor, he left his balky guide in the boat and waded alone, deep into the quaking morass, in search of a colony of Laughing Gulls. Like a rainbow questrist he was drawn on and on, zigzagging erstwhile to keep within his depth, until finally he came upon the colony. Until now he had given little thought to his return, and a downpour had set in, with no more to guide him than the waving sawgrass, he vainly tried to retrace his steps. His load was as heavy as his legs were weary and with the tide rising he began to wonder what Mrs. Bales and the boys at home would do with his big egg collection. He floundered on and on until his recollection of passing events became very hazy. However, he recalls that when the guide finally dragged him over the gunwale he surveyed his sorry plight and gurgled out, in words of Mother Goose, "Lawk a mercy me, can this be I?"

ANNUAL MEETING

The seventh annual meeting of The Wilson Ornithological Club was held at Chicago, Ill., on December 27 and 28, 1920. As one of the constituent organizations forming The American Association for the Advancement of Science its meetings were held with the annual meeting of that body at the University of Chicago. The sessions of the various associated and affiliated organizations extended from December 27 to January 1.

The morning session of The Wilson Club began with a conference of the officers, following which the meeting was convened and the preliminary business taken up. President Strong sketched over the work of the past year and outlined the needs and possibilities for increasing the Club's activities during 1921. The report

of Treasurer Fordyce was read and developed the fact that, by careful management and by reducing the size of the official organ, a balance of about twenty dollars was on hand. Secretary Ganier reported on his work during 1920 and presented a list of 71 new members. The present membership, excluding those who are delinquent, was given as approximately 400. He spoke in favor of an aggressive campaign of activity for new members during 1921 and a larger membership fee to make possible a larger and more attractive official organ. Letters, from a number of members not in attendance, were read in support of this view. Editor Jones was called upon to outline his ideas. He expressed himself as wishing to see The Wilson Bulletin put on a good financial footing in order that at least 64 pages of illustrated matter might be published in each number. He also suggested and requested that several associate editors be appointed to assist in gathering suitable material.

The president gave the gist of some correspondence which had developed with a firm specializing in the publication of scientific periodicals and which had made a tentative proposition for taking over The Bulletin. A letter was read from Vice-President Oberholser favoring its acceptance. Inasmuch as the contract made necessary a considerable advance in dues and certain changes in the established editorial policy, the matter was referred to the Executive Committee, with instruction to report its recommendations at the afternoon session of the second day.

A committee on nomination of officers for the year 1921 was appointed and instructed to report at the same time. Upon motion the Club voted its support to the movement to make a National Park of the Sand Dunes of Lake Michigan along the Indiana shore. A committee consisting of Messrs. Schantz and Coffin and Miss Catherine Mitchell was instructed to draw up resolutions to that effect.

After lunch hour on the second day, business was again taken up. The committee on Indiana Sand Dunes presented their resolution, which was accepted and passed.

Mr. Metcalf brought in, from The Echological Society of America, resolutions protesting the use of our National Parks for water power or other commercial purposes. The Wilson Club voted its support and ratification of the resolutions.

The committee on nomination of officers reported that their recommendation was for the reëlection of the present officers, viz., R. M. Strong, President; H. C. Oberholser, Vice-President; Albert F. Ganier, Secretary; George L. Fordyce, Treasurer.

A committee of three was called upon to report on the matter of publication. They reported a unanimity of opinion that the official organ be enlarged to at least 48 pages, but there was

divergence of opinion as to how the means should be secured. It was brought out by Dr. Swenk that a raise in dues would make necessary a revision or abrogation of the contract with the Nebraska Ornithologist's Union. After considerable discussion, Mr. Ganier moved that the dues be raised to two dollars for Associate and three dollars for Active members. Dr. Jones amended, that the subscription be raised to two dollars. The question of the legality of such action at this time was raised, and the point being sustained, it was agreed to defer action until the next annual meeting, at which time the whole matter of the increase of membership dues, subscription price of the official organ, and the publication procedure of the official organ will be up for action.

It was later voted to advance the subscription price of The Wilson Bulletin to non-members to $1.50.

The Committee asked for an extension of time in which to study the proposal from the publishing concern relative to taking over the management of The Bulletin. The request was granted and they were instructed to make a definite recommendation at the next meeting.

A committee of Ways and Means, consisting of Messrs. Swenk, Stephens and Bales was appointed by the president to canvas the membership to lay before them in detail the financial needs of The Club and to receive funds for enlarging The Bulletin. The Secretary volunteered to organize two competing membership teams to increase the membership. A vote of thanks was extended to the Chicago Ornithological Club, through its committee chairman, Mr. Coffin, for the many courtesies shown the Wilson Club during its meeting.

The literary and social features of the Chicago meetings were particularly successful. A registration of members showed 32 present and nearly as many visitors. Quite a number of those present had come from a considerable distance and the interchange of experiences thus afforded was most profitable to all. A well selected list of papers was read at the meeting and illustrations were well above the average. The subject of the President's address was "The Problem of Soaring Flight," in which Dr. Strong gave the result of his observations during the past few summers on the Great Lakes, and with particular reference to the flight movements of gulls and terns. Several reels of motion pictures were secured from the National Association of Audubon Societies, and were much appreciated.

A motion was made by Dr. Jones, and passed, thanking Mr. T. Gilbert Pearson for the loan of the motion picture reels.

The evening meeting was a feature, affording as it did opportunity for informalities and the making of new acquaintances. A number of paintings, by Mr. Carl Plath, were on exhibition, as

well as one of the Duck Hawk from the brush of Mr. George M. Sutton, and loaned by the owner. The evening was concluded with Mr. Richardson's collection of slides, at which time over 250 accurately tinted and splendidly taken views of birds and wild flowers were thrown on the screen.

When the hour of adjournment arrived, at the close of the second day, those who had attended expressed themselves as well repaid for their time and not a little loath to wait a year for a repetition of the pleasure.

The complete program was as follows:

MONDAY, DECEMBER 27

9:30 A. M.—Conference of Officers.
Business Meeting of the Club.
The New Standard Catalog for Oological Exchange,
B. R. Bales, Circleville, O.
Ornithological Pot-Pourri—Members.
President's Address.

12:30 P. M.—Buffet Luncheon, Men's Cafe, University of Chicago Campus.

2:00 P. M.—Bird Banding; Purpose, Methods and Results.
(Slides)—S. Prentiss Baldwin, Cleveland, O.
Bird Banding in the Douglas Lake Region of Northern Michigan.
(Slides)—Dayton Stoner, Iowa City, Iowa.
Observations Made on Auto Trips Through the Far West, Lynds Jones, Oberlin, O.
Bird Notes from Eastern Florida, (Slides),
Gerard Alan Abbott, Gallipolis, O.
Breeding Warblers About Atlanta, Ga.,
Wm. H. La Prade, Atlanta, Ga.

MONDAY EVENING

6:30 P. M.—Annual Dinner at the City Club, Plymouth Place, near Van Buren St.

8:30 P. M.—Birds and Seasons in the Chicago Area.
(Slides)—Wm. D. Richardson, Chicago, Ill.

TUESDAY MORNING, DECEMBER 28

9:00 A. M.—Impressions of a Nature Lover in the Appalachian Mountains, (Slides),
O. M. Schantz, Cicero, Ill.
June Bird Notes from the Great Smoky Mountains of Tennessee,
Albert F. Ganier, Nashville, Tenn.
Changes in Bird Habitat and Other Notes,
C. W. G. Eifrig, Oak Park, Ill.
The Great Horned Owl,
Herbert L. Stoddard, Milwaukee, Wis.

2:00 P. M.—Reports of Committees and Conclusion of Business.
Songs and Call Notes of Warblers,
George R. Mayfield, Nashville, Tenn.
Symposium of Bird Notes from the Nebraska Region,
Myron H. Swenk, Lincoln, Neb.
Notes on Birds of the Cape Fear Region of the North Carolina Coast, (Slides),
Z. P. Metcalf, West Raleigh, N .C.
Seabird Colonies Along the Texas Gulf Coast.
Motion Pictures taken by Wm. H. Finley, for the National Audubon Societies.
Adjournment.

CORRESPONDENCE

Comments on Migration Records of Eastern Kansis Birds.—In the Wilson Bulletin of December, 1920, Mr. P. B. Peabody, Blue Rapids, Kan., seeks more light on the migration records for Kansas birds; critically reviewing the list published at the University of Kansas, Department of Zoölogy. Being entirely unacquainted with the parties who have of late years worked over these records in the University I have no disposition to defend them beyond my personal knowledge of the facts. I happen to know, however, that the first records had their foundation in work done many years ago and that they are the result of cumulative painstaking observation and effort.

I had the following experiences at the Fort Leavenworth Military Reservation and vicinity, as may be gathered from my article in the September number of the Wilson Bulleton. The Whippoorwill (*Antrostomus vociferus vociferus*) is extremely abundant, and I have flushed them several times in broad daylight almost from under my feet. As to the Redstart (*Setophaga ruticilla*) it was common in pairs that were always found in the same locality and no doubt nesting, my observations extending up to June 30.

As to the Summer Tanager (*Piranga rubra rubra*) it was not extremely rare. My original record for Kansas of a summer resident pair of Louisiana Tanagers (*Piranga ludoviciana*) I fear will knock some bird men off the Christmas tree, and may merit the criticism: "This is absurd, enough." However, this pair was seen several times at close range and in good light. There is no other bird to my knowledge which could be mistaken for it even with field observation alone.

I do not believe that the birds care particularly about our records on Ornithology and they often migrate beyond our lawful ranges for them. It is possible, of course, to be mistaken in field observations, but as to observations that were made under proper

conditions and on species that are generally identified with ease on sight the observer's findings should not be condemned because the experiences of others have not precisely fallen into the same category.

I hope that this comment will give some benefit in bird study for the Kansas records, and I believe that these criticisms are very much worth while in stimulating interest in the development of records and helpful in perfecting them.

David C. Hilton.

REVIEW OF LITERATURE

What Bird is That? A Pocket Museum of the Land Birds of the Eastern United States Arranged According to Season. By Frank M. Chapman, Curator of Birds in the American Museum of Natural History and Editor of "Bird-Lore." With 301 Birds in color by Edmund J. Sawyer. D. Appleton and Company. New York. London. 1920.

In this little book of 144 text pages, and six pages of discussion of "Birds and Seasons," and the 301 colored figures of birds, which are arranged on eight full page plates, Mr. Chapman has put within reach of all a handy little volume which should be the companion of every lover of birds who is not sufficiently familiar with the common land birds to feel confident of their identity at sight. One great merit of the colored figures is that all are drawn to scale on each separate plate. Many of the colored figures are admirably done as to pose, proportions and color. A very few would, of course, be of little use for purposes of either field or laboratory identification, partly because they have no distinctive features, notably the small flycatchers and some of the sparrows. We cannot but exclaim over the mechanical accuracy which is shown in the color plates. One of them contains fifty-five figures, and yet not one of them is blurred in the copy at hand. The book is small enough and light enough to be easily carried as a field companion. It is fully up to the high standard of excellence of Mr. Chapman's various writings.

A Distributional List of the Birds of Montana. With notes on the migration and nesting of the better known species. By Aretas A. Saunders. Pacific Coast Avifauna No. 14. Cooper Ornithological Club.

In this list there are 337 species treated, including one extinct and four introduced species, but not counting 13 treated as hypothetical. The book begins with a discussion of the distributional areas of Montana, with accompanying map. This discussion is

accompanied by seven half-tone reproductions of photographs illustrative of typical landscape features. The text contains 27 half-tone reproductions of eggs and birds from photographs made in the field. There are ten pages of bibliography, and a full index of the species which are treated. The text is concerned with the occurrence, migration and nesting of the species. The only suggestion which the reviewer would offer is that clarity would have been enhanced if mention were made of the distributional area in which each species occurs in addition to giving the political division. In a state of the size and diversified topography of Montana it is not easy for the person who is unacquainted with its counties and cities to trace out the places in which the species under discussion occurs when only political divisions are mentioned. We have seen no distributional list which is superior to this one, and few its equal.

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MIGRANT SHRIKE AT NEST

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MIGRANT SHRIKE

(*Lanius ludovicianus migrans*)

BY IRA N. GABRIELSON

On the 21st of June, 1915, while poking about in a natural hedge composed of plum, hawthorne, and other like trees, I happened to glance up just in time to see a Shrike slipping off through the branches. A little investigation soon disclosed a nest built of sticks, sections of morning glory vines, scraps of paper, and shreds of wool and lined with small roots. Looking into the nest I discovered five eggs. While this nest was too high in the air to photograph successfully I determined to try moving it. On returning July 5th I found five young ones 3 to 5 days old. This suited me exactly as the feeding instinct seems to be at its height during the first few days of the nestling period. Consequently, I cut the branch on which the nest was built and lowered it six feet. While many others have used this method successfully, this was the first nest which I was able to move without disturbing the birds. A blind was erected, but the following morning it had been torn down by cattle. It was replaced and at 5:00 p. m. was entered just long enough to make sure that the old birds were still caring for the young. On July 8 I entered the blind at 11:00 a. m. and remained until 4:45 p. m. watching these birds and taking photographs.

During the seven hours on July 6 and 8 while the nest was under observation the nestlings were fed 39 times or at the rate of 5½ times per hour. Large grasshoppers, crickets, caterpillars, larvæ of various kinds of beetles, and spiders made up the recognizable food materials. The

parents foraged largely from a telephone wire just above the nest. From this lookout they could watch not only the nest but also commanded a view of a considerable area of grassy hillside. Here they watched for the leathery grasshoppers which frequent the roadsides and when one flew the shrikes were after it instantly. I have frequently heard people comment on the supposed unerring accuracy with which insectivorous birds capture their prey, but here at least was one instance where such was not the case. Fortunately my blind was so located that I could see both pursuer and pursued and on this date the shrikes missed fully 50 per cent of the grasshoppers they attempted to catch. From personal experience I know how disconcerting it is to have a gaudy red or yellow winged grasshopper flying immediately before one and suddenly fold its wings and disappear. Apparently it affected the shrikes in the same manner as they flew aimlessly for a moment and then returned to their perch. From my vantage point, of course, it was easy to see the hopper drop beside a clod, the colors blending perfectly. The shrike, however, being in close pursuit saw a very conspicuous insect suddenly drop from its plane of vision and, as the grasshopper was motionless on the ground before the shrike could turn, it had everything in its favor. The fact that one shrike caught three out of six seemed to me to be striking proof of keenness of vision and agility on the wing.

Once an English Sparrow came to the nest and peeped in. Immediately one of the shrikes was after it. They passed from sight around the blind but for several seconds I could hear the rustle of the shrike's wings and the cries of the sparrow. On similar occasions at nests of other species I have seen the sparrows flee from the irate parents but never with any such panic stricken fear as in this case. There was no doubt that the sparrow had recognized the deadly nature of the bird whose home he had so rashly inspected.

On ordinary occasions the parents were very quiet about the nest although twice one of the birds, presumably the female from the actions, uttered a loud harsh scream

just before feeding. Both birds utilized the top of the blind as a perch at times and both had a sterotyped path of approach to the nest through the branches of the plum tree. Sanitary measures were of the usual kind, the excreta being carried some distance away and dropped while the parents were yet flying.

These birds were an exceedingly interesting family and I have wished to spend more time with them than was possible in the circumstances under which I was working.

NOTES ON THE HABITS OF THE BREEDING WATER BIRDS OF CHATHAM COUNTY, GEORGIA

BY W. J. ERICHSEN, SAVANNAH, GA.

[CONTINUED FROM LAST ISSUE]

Hydranassa tricolor ruficollis — LOUISIANA HERON.

Florida caerulea — LITTLE BLUE HERON.

As all of the notes which I have on the nesting of these herons are based on observations made in a fresh water pond on Ossabaw island, it seems not out of place to consider them under one heading, as their nesting habits, as I noted them, are essentially similar. During a visit to Ossabaw island in May, 1915, I estimated the number of pairs of Louisiana and Little Blue Herons nesting there to be between two and three hundred, fully two-thirds of them being the former species. Most of the nests were built in willows, but I noted a few which were placed on the tops of patches of broken down saw grass wherever they were of a sufficiently dense growth to support the weight, and I saw a dozen or more that were built upon the foundations of old nests. Although many nests contained young, the majority of them held from three to four eggs. The nestlings were in various stages of development; some just hatched, while others were nearly old enough to leave the nest. Occasionally one would fall into the water, and if it had attained a sufficient age to have gained enough

strength, would flounder about until it could secure a foothold on one of the many willow stumps which protruded from the water. Whether or not these unlucky youngsters ever succeed in regaining their nests, or a less precarious position, or are identified and fed by their parents until old enough to fly, I am unable to state. It is certain that the very young or weak nestlings which fall overboard are drowned, or are caught by the huge Cotton-mouthed Moccasins which infest the pond. These reptiles also destroy numbers of eggs of the herons.

Throughout the day numbers of these herons can be seen winging their way from the pond to the marshes and creeks at the north end of the island where they feed. They also frequent the swamps in the vicinity of the rookery, feeding upon frogs, crawfish and other animal matter which abounds in such places. The communal instinct, so apparent in their habit of breeding only in colonies, is much in evidence when the birds are feeding, as at this time also they are usually found in companies of from three to a dozen individuals.

These gatherings are nearly always made up entirely of one species; only occasionally will mixed companies be found. Sometimes a solitary individual will be seen patrolling the mud flats and the banks of creeks, but in my experience such occurrences are rare. They are not at all shy, either while feeding or when in the vicinity of their nests. On several occasions while I was wading in the pond individuals of both species alighted on the willows above my head, some even returning to their nests. In connection with their behavior at the nests it may be noted, however, that while the presence of several persons in the pond only slightly disturbed the birds, the acts of breaking a stick within their hearing instantly caused every one to rise into the air simultaneously.

My experience is that the eggs of the Louisiana Heron cannot with certainty be distinguished from those of the Little Blue species, or vice versa, when the two are nesting

in considerable numbers in close proximity. In measuring a large number of eggs those of the former may average a fraction of an inch larger, but both, of course, have the identical tint of bluish green. The same difficulty of identification applies to the eggs of the Snowy Egret, as has been mentioned in the account of that species, and the problem before the collector of the eggs of these three herons is one solved only by "watchful waiting."

If either of these herons winters it must be in exceedingly small numbers, and these must be widely scattered over the immense chain of heavily forested islands and hammocks along the coast, for I have failed to detect either of them in the county during the months of December, January and February. I know of no other locality in Chatham county where they breed, but it is probable that small numbers nest on some of the isolated hammocks which abound on this coast.

Butorides virescens virescens — Green Heron.

While this heron is really abundant, the localities at which it breeds are widely separated and most of them are not easy of access. Although colonies are the rule, now and then an isolated nest is found, and, while it prefers localities where there is water, it is often found nesting in dry woods. In a dense thicket of stunted water oaks growing close to the margin of the salt marsh a short distance from the summer home of G. R. Rossignol on Wilmington island, large numbers of Green Herons annually rear their young. On April 18, 1915, nearly every nest here held its full complement of eggs. On May 30, 1915, in a cluster of oaks growing in damp woods near the Herb river and not far from a much travelled highway, I noted a single nest, within arms reach, containing three eggs. These are my earliest and latest dates respectively when fresh eggs were noted. These birds breed in considerable numbers on Sylvan's island on the Herb river some three miles from the town of Tunderbolt, placing their nests in the extreme tops of tall pine saplings. Probably the most populous colony in the county is near Lazaretto station, on

Tybee island. Here the birds breed in a jungle of oaks difficult to penetrate. So numerous are they that every available nesting site is occupied, many new nests being built upon the foundations of old ones. In May, 1915, I found a few pairs breeding in company with several other species of herons in a pond on Ossabaw island. This species prefers oaks in which to place its nest, and as in this pond, willows afford the only tree nesting sites, it breeds there only in very small numbers. Furthermore, it is apparently averse to breeding in any great numbers in company of other species of herons. Its nest is a shabby affair, being simply a few sticks loosely arranged in a circular manner. Nearly every one that I have examined was without the least sign of a depression to prevent the eggs from rolling out, and I cannot conceive by what mysterious force they are held, during high winds, in nests built in exposed situations. On a number of occasions I have been in rookeries during wind storms, but none of the eggs which were left exposed due to my frightening the birds from them, were blown out. The usual complement is four, although sets of five are frequently laid. The color is bluish green, and in size they average 1.40 x 1.10.

Young Green Herons become active at a surprisingly early age and begin climbing out on the limbs near the nest many days before they are able to fly. The parents exhibit much anxiety when the young are disturbed, often threatening to strike the intruder with their sharp bill.

This species is much given to frequenting the salt marshes where an abundance of food is always to be obtained. After it has satisfied its hunger, it resorts to nearby thickets of trees, where it remains concealed and quiet for long periods. Its food is of much the same character as that of other species of herons.

McQueen's island, between the city of Savannah and Tybee island is a favorite feeding ground for large numbers of these herons. This island is eight miles long, but averages only about one mile wide, in some places being but three hundred yards in width. It is almost wholly composed of salt marsh; here and there

a clump of myrtle bushes or a cluster of stunted live oaks breaks the monotony of this long stretch of boggy waste. The Tybee division of the Central of Georgia railroad traverses the entire length of the island, and for several miles on both sides of the track are to be seen the "pool tables." These curious formations are several disconnected series or groups of shallow depressions in the hard marsh. Each group consists of six to ten symmetrical oblong "tables," each measuring about eight by twelve feet and varying in depth from six to eighteen inches. At each high tide these tables are flooded, and hence are always full of water. Each receding tide leaves stranded in these depressions myriads of minnows and much other aquatic animal matter of various kinds. To these "tables" numbers of Green Herons resort at low tide to secure this choice food.

With the advent of the first cool weather, which is usually between the 5th and 15th of October, there begins a pronounced southward migration which continues well into November. I have noticed that on foggy or rainy nights these flights are more noticeable, or perhaps it should be said more audible, since the passing of the birds would be unsuspected were it not for their loud squawks. Their harsh notes can be heard throughout the night, the more inclement the weather the noisier are the birds. A few individuals winter, but during that season they are widely scattered and therefore seldom detected.

Nycticorax nycticorax naevius —

Black-crowned Night Heron.

This handsome heron must be included among the rare breeding species. It nests in small numbers in the heron colony on Ossabaw island, but nowhere else, as far as local observers have been able to determine. The birds I found breeding there in May, 1915, were very shy, and as it was almost impossible to positively identify their eggs, due to the great similarity between them and those of the Little Blue and Louisiana Herons, little nesting data was secured. I have not seen above ten or a dozen individuals of

this species in Chatham county during the past ten years, and am therefore unable to give any notes on its life history.

Rallus elegans — King Rail.

This species breeds locally in the county but I have never found its nest. T. D. Perry has in his collection a set of ten eggs which was collected by a boy on April 20, 1911, in a small reedy pond along the right of way of the Atlantic Coast Line railroad near its junction with the Ogeechee road. I saw no King Rails in the pond on Ossabaw island during my visit there in May, 1915, although a more favorable nesting environment would be difficult to find.

Rallus crepitans waynei — Wayne's Clapper Rail.

Throughout the day the harsh cackling notes of this rail can be heard everywhere in the extensive areas of salt marsh along this coast. It breeds in large numbers, and, as the range of this form and true *crepitans* overlaps in winter, it is also found abundantly at that season. It is a marsh prowler to such a degree that, except of course while in flight during migration, it never leaves the boggy fastnesses, and, due to the difficulty of observation, and progress through its haunts, facts concerning its life history are acquired only with the greatest difficulty. There is some individual variation in degree of shyness, and also in nesting habits. Many birds that I have encountered during the breeding season have exhibited a manner close to stupidity, apparently becoming somewhat confused when discovered upon the nest or even when suddenly come upon in the marsh. In both cases, when the marshes are flooded, the bird nearly always takes wing, rising awkwardly and apparently with much effort, uttering two or three syllables of its cackling note; but at low tide it never resorts to this means of escape but always skulks away in the marsh grass. I have only a few times observed it incubating — in each instance, when the tide was out — and then secured only fleeting glimpses; the bird dropping off the nest and quickly gliding from view through the dense marsh.

The almost monotonous sameness of character of this bird's haunts prohibits it any indulgence in variation in selecting its nesting sites. Its bulky platform of water-soaked and decaying marsh grass stems is always placed as high above the mud as the height of the vegetation will permit, but in spite of this, many eggs and young fall victims to spring tides. Besides this menace, this bird has other enemies to contend with. Fish Crows (*Corvus ossifragus*), Raccoons (*Procyon lotor*) and Minks (*Mustela vison lutensis*) take heavy toll, and hundreds are shot every year by gunners for food. Mortality from all causes, however, does not thin the ranks of this marsh-dweller. In fact I believe it is yearly becoming more abundant. Prolificness, and the unchanging aspect of its haunts due to the fact that they are unfit for agricultural or other uses and are therefore not being reduced in area, are the chief factors in its increase, rendering its extinction unlikely.

The breeding season commences early in April and is frequently prolonged through July if repeated mishaps to the eggs have occurred. Although I have examined many nests of this rail I have never found one that contained more than eleven eggs. Seven to ten seems to constitute the usual complement, as far as my observations go, although I have no doubt that larger sets are frequently laid. On April 18, 1915, in an area of short marsh grass on Cabbage island that is frequently flooded, I found seven eggs which had been deposited simply on the soft mud, no evidence of a nest being noted. Although the marsh had not been flooded since the eggs were deposited, the latter were cold and apparently deserted. No doubt the female was compelled to lay before she had time to construct a nest. The eggs of this bird exibit little variation in ground color or the color and size of the spotting. The former is quite constant, being a deep buff, while the markings are usually small, rounded and quite well defined; brown and lilac, and generally scattered over the entire surface.

This bird is quite an item in the food supply of people living on the "salts," particularly negro fishermen. Numbers of the latter have assured me that the eggs also are

very good eating. The negroes seldom, if ever, walk in the marsh in search of the eggs, but paddle through the creeks and secure what they can find in the marsh close to the banks. Consequently the number taken is inconsiderable as most of the birds build their nests some distance from the rivers and creeks.

Much is yet to be learned of the behavior of this marsh-dweller. Large areas of its marshy retreats are inaccessible unless the observer is provided with some means of progress through them that will eliminate bogging, as the mud in those areas, which are flooded at high tide, is often a foot or more deep and very soft and an invasion afoot is usually impossible.

Gallinula galeata — Florida Gallinule.

I have secured very little data on the nesting habits of this interesting species, and my knowledge of its distribution and abundance in the county is not extensive. It was not until 1915 that it was added to the list of breeding birds of Chatham county. In May of that year G. R. Rossignol, Frank N. Irving and the writer visited Ossabaw island where a number of pairs were found breeding in a fresh water pond. The data follows: May 11, nest containing seven fresh eggs; May 14, one nest containing eight slightly incubated eggs, and one containing five fresh eggs. On the latter date we also noted a nest containing one egg. All of these nests were built a foot above water, in tall reeds and cat-tail flags, and were composed of dead and water-soaked stalks and leaves of these plants. The first nest was discovered by Mr. Irving soon after we had entered the pond. Four feet from this nest was a dense clump of tall reeds, just within the edge of which I stood motionless for an hour and a half, in water waist deep while a torrential rain completed the drenching and added to my discomfiture; all in hopes of catching a glimpse of one of these shy birds. Soon after I took my stand in the reeds I heard a gallinule utter its note and splash about in the water a few feet from the nest, but I was unable to catch sight of it through the dense vegetation. Fully an hour

elapsed during which I heard or saw no gallinules in the immediate vicinity of the nest which I had under observation. I was rapidly growing impatient, not through diminishing interest in the object which had caused me to remain motionless in the reeds for so long, but because of my exceedingly uncomfortable position in the waist-deep water and driving rainstorm.

I was on the point of deserting my post when a loud splashing in the open water near the nest announced the close approach of a gallinule, and a moment later I saw the bird climb up the runway of broken-down reeds to the nest. It remained here only a minute, however, diving into the water and disappearing, having possibly caught sight of me. The gallinules in this pond apparently were restless, continually moving hurriedly from place to place even when undisturbed by us, and were very noisy. Their cackling notes constantly uttered gave the impression that they were abundant, but it is doubtful if more than six or eight pairs were nesting in the pond. We occasionally caught sight of one as it swam across an open space of water. If suddenly encountered they would either dive or spatter swiftly away along the surface of the water, usually choosing the latter method of escape.

The eggs that we collected present little variation, the ground color being buffy, finely spotted with reddish brown. They average 1.70x 1.20.

Many eggs and young of this species are, no doubt, destroyed by Cotton-mouthed Moccasins, which abound in this pond. These ebony denizens of this bird refuge are annually increasing in numbers as they have few natural enemies and are seldom molested by man, as the repellant nature of this rush-grown pond is sufficient to dampen the ardor of anyone but the most enthusiastic bird student. I secured some interesting notes on the habits of these reptiles. On land they are at all times lazy and sluggish, but are extremely active and wary when in the water, swimming with ease and great rapidity. While wading in the pond I frequently noted huge fellows coiled about some limb close

to the surface of the water awaiting an opportunity to make a meal of heron's eggs. At such times a close approach was impossible, as the reptiles would plunge into the water below while I still was some distance away.

Philohela minor — Woodcock.

This fine bird is rare at all times in the immediate vicinity of Savannah but probably occurs more numerously in the less settled sections of the county. On February 8, 1917, Mr. W. M. Kidwell of Savannah collected a fine set of four fresh eggs near Pooler. This set is now in the collection of T. D. Perry. These are the only eggs of this species that have been taken in the county. On April 8, 1917, while in company with T. D. Perry, I flushed an adult and four nearly grown young from a cover of tall dried grass interlaced with low bushes in a tract of wet woods just east of Big Four Park. Although I saw the exact spot where two of the birds alighted, I did not again succeed in flushing them. The locality where I noted these birds affords ideal nesting sites for this species, and there is no doubt in my mind that this brood was hatched close to the point where I noted it.

Catoptrophorus semipalmatus semipalmatus — Willet.

The Willet's haunts are sand banks and mud flats adjacent to sounds and inlets, from which, during low tide, when they are exposed, the birds glean an abundant supply of food. This species breeds abundantly on most of the small coastal islands and hammocks between Tybee and Warsaw islands. Apparently it is absent from Ossabaw island, for I noted none on the north end of that island during a part of May, 1915. Its center of abundance on the coast of Chatham county is the southern end of Cabbage island, where numbers annually resort to breed. It nests sparingly on Buck Hammock, where I noticed a nest on June 14, 1914, containing four eggs on the point of hatching. On July 4, 1915, I flushed an adult from a nest on Cabbage island containing four eggs which also were on the point of hatching. This is my latest breeding record. In 1917 I again visited Cabbage island, and on May 13

noted a dozen or more nests containing four eggs each, all far advanced in incubation. This is the earliest date upon which I have noted full complements of eggs.

The nesting environment of this species is the shell-strewn and grassy areas well above high water mark. It is essential that there be an abundance of vegetation as protection for the eggs and young. The bare wind-swept sandy areas are never used as nesting sites, as their aspect is continually changing, due to the absence of vegetation necessary to bind the sand to prevent its shifting. When placed among wild oats and other dense beach vegetation, Willets' nests are exceedingly hard to find if the birds are not incubating. The exact location of ninety percent of the nests I have found was made known to me by flushing the sitting bird. If the uninitiated bird student desires a glimpse of their treasures he should never visit their breeding grounds before the sun is well up, as an early morning hour will generally prove to be an unfortunate and disappointing choice of time. At this time the birds are feeding, and therefore are absent from their nests. Willets, of course, feed at other times of day, but it is only at a very early hour that a concerted movement of the birds toward their feeding grounds is observed. Oftentimes this species makes no nest other than scooping out a shallow depression in the sand to prevent the eggs from rolling. On many occasions, however, I have found really elaborate nests of soft fibrous grasses gathered from localities some distance away. Quite frequently, too, I find eggs deposited in grassy spots in which situations the birds use the growing grass for nest material, simply bending it down and arranging it in a circular manner. The usual complement of eggs is four, and provided the first laying is hatched and the young successfully reared, the birds will not lay again that season. It is usually necessary, however, for a large percentage of the birds to lay two or three sets of eggs before they are finally successful in raising a brood. In addition to those that are collected by ornithologists and others, numbers of eggs are destroyed by predatory animals, and unusually high tides wash many away. Being

rather handsome, and exhibiting considerable variation, they are much in demand by oölogists. The ground color is usually olivaceous-drab, but often is brownish-olive and sometimes light clay-color. The markings are numerous; generally heavy; sometimes evenly distributed over the entire egg though generally thickest and largest at the greater end. The color of the markings is umber-brown of varying shade. Besides this there are numerous paler shell-spots. Average size of eggs, 2.00 x 1.50.

Willets appear to be greatly concerned when their breeding grounds are invaded. Whenever I visit Cabbage island the landing is usually made at a point near the north-western side, in order to avoid dangerous breakers. Most of the Willets inhabiting the island breed close to this point, and a moment after I set foot upon land the air is filled with gyrating, vociferous birds. As long as a person remains in the vicinity of their nests, the birds keep up a continual outcry; circling back and forth overhead, and often hovering on quivering wings. Frequently they alight on some nearby mud flat or sand bank, and gather in groups of three or four.

This species has noticeably decreased in numbers during the past six years. It shows a very strong attachment to a locality as long as favorable conditions exist there. However, incessant persecution will finally drive it to other sections.

Ochthodromus wilsonius — Wilson's Plover.

This dainty bird of the beaches breeds abundantly on the coast islands. It is, however, absent from many localities which apparently are suitable. The breeding season commences in May, my earliest record being May 13, 1915, when I noted full complements of fresh eggs on Ossabaw island. Its nesting environment is substantially the same as that of the Willet, and the two are ordinarily found breeding in close proximity. It is more abundant on Cabbage island than anywhere else in the county, although the beach area suitable for nesting is of rather small extent. It makes no nest other than scooping out a shallow hole in

the bare sand. Three eggs is the full complement. The ground color is pale buff; occasionally deep buff; several specimens I have seen were nearly pure white. The markings are blackish or very dark brown, and are mere dots and specks, but spread thickly and evenly over the egg. Very rarely do they tend to congregate about the larger end, or show a tendency to aggregate into splashes. The average measurements are 1.45 x 1.05.

Although not wary in the sense that they cannot be closely approached when absent from their nests, Wilson's Plovers invariably leave their eggs while the intruder is yet some distance away. As their eggs harmonize perfectly with the sand and shells among which they are deposited, they are very difficult to discover. A method I pursue, which I usually find successful if the air is still and the sand not settled by rain, is to systematically follow the birds' tracks which invariably leads me to their nests; for, according to my observations, the birds usually, when leaving their eggs, run some distance before taking wing. They exhibit much solicitude when their breeding grounds are invaded, following the intruder for long distances and uttering a sharp whistling note consisting of a single syllable.

The young are adepts at hiding among the grass and shells, and it is difficult for the observer to locate them even though knowing exactly where to look for them. They are able to run about immediately after leaving the shell, as the following occurrence will show: On May 31, 1917, a novel and interesting incident occurred in connection with my study of the nesting habits of this species. In company with G. R. Rossignol and T. D. Perry, I visited Cabbage island, where Wilson's Plovers nest in some numbers. Mr. Perry, desirous of securing eggs of this species and the Willet, had collected a few full sets of each, and a single egg of the Wilson's Plover which he supposed was addled. Returning in the late forenoon to the summer home of Mr. Rossignol on Wilmington island where we were staying, we deposited the collecting basket containing the eggs in a room, and retired to the front porch of the house. An interval of about two hours had elapsed when

I heard a faint peeping sound emanating from the room in which we had left the collecting basket. Upon investigation, I discovered that the Wilson's Plover egg had hatched, and the downy youngster was actively running about the room, seemingly much at home in its strange environment. The specimen, preserved in alcohol, is now in Mr. Rossignol's collection.

Haematopus palliatus — Oyster-catcher.

Although this fine bird nested abundantly on this coast twenty or twenty-five years ago, as I am informed by T. D. Perry, it is now so rare that I have seen but two nests during the past ten years. On May 10, 1915, Frank N. Irving, in whose company I was, found a single egg deposited in a depression on top of a wall of oyster shells on Raccoon Key. On the 15th we returned to the Key, but discovered that during our absence an unusually high tide had washed the egg off the wall. During an expedition to Cabbage island on May 12, 1918, in quest of eggs of McGillivray's Seaside Sparrow (*Passerherbulus maritimus mcgillivraii*), T. D. Perry and I located a set of three slightly incubated eggs of the Oyster-catcher. These eggs also were deposited in a slight depression on top of a bank of oyster shells which had been thrown up by the surf. Where nesting sites of this character can be found, this species always selects them. The eggs are creamy white or pale buff, thickly spotted with very dark brown. They measure 2.25 x 1.50. This species is very uncommon and widely scattered in this county during the breeding season, as well as during the winter months, and I have had almost no opportunities to observe its habits. The few individuals that I have encountered were excessively shy, leaving the vicinity at my approach.

BIRD BANDING IN NORTHERN MICHIGAN DURING THE SEASON OF 1920

BY DAYTON STONER

Bird banding, as has many another phase of zoölogical science, has had its inception in a rather sporadic and ill-defined manner. And, like most things, it has undergone a process of evolution during which time various modifications and vicissitudes have been encountered.

So far as the writer is aware Audubon was the first person in America to attempt bird banding. He writes as follows: "I attached light threads to their (young Phœbes in the nest) legs; these they invariably removed, either with their bills, or with the assistance of their parents. I renewed them, however, until I found the little fellows habituated to them; and at last, when they were about to leave the nest, I fixed a light silver thread to the leg of each, loose enough not to hurt the part, but so fastened that no exertion of theirs could remove it." The next season, "Having caught several of the birds on the nest, I had the pleasure of finding that two of them had the little ring on the leg."*

Since the first attempts at bird banding, considerable development and progress are to be noted, particularly since 1908, when the first concentrated movement in this work was undertaken by the New Haven Bird Club. Previous to this time some headway had been made in Europe where banding was indulged in about 1899 and beginning with 1902 a few individuals in the United States engaged in this phase of ornithological endeavor in an effort to throw some light on the travels of birds by means of attaching to them inscribed metal bands.

It was soon found that the efforts of only a few persons in so large a field would avail little and the matter having been brought to the attention of the American Ornithologists' Union in November, 1908, it was considered with fa-

*Audubon, John James, American Ornithological Biography, II, 1834, 126.

vor and within approximately the next eight months 5,000 bands were issued of which about 1,000 were placed and from which 30 return records were obtained by December, 1909.

A more definite organization now seemed advisable and accordingly at a meeting of the American Ornithologists' Union held in New York City on December 8, 1909, the American Bird Banding Association was formed. However, owing to various difficulties, little was accomplished by this organization and late in 1911 the Linnaean Society of New York offered to come to the rescue. A committee of five was appointed to arouse interest and raise funds both of which were done with gratifying results. In the spring of 1912, 4,173 bands were distributed among forty-four persons in widely separated parts of the country. 800 of the bands were placed on seventy-three species of birds.

Since 1912 it again seems that the bird banding work was continued only by an occasional enthusiast here and there, but with the announcement of Mr. E. W. Nelson, Chief of the United States Biological Survey, in May, 1920, that that organization would henceforth conduct this work, banding has taken on a new lease of life. Under the direction and guidance of the Biological Survey definite and valuable results should soon be forthcoming. In spite of the numerous handicaps encountered by the Survey in taking over this work it has succeeded in interesting to date about one hundred observers to whom approximately 5,000 bands have been issued.

Since the work of banding is encouraged among all persons and organizations interested in birds it is desirable that only a limited number of styles of bands be used in order to avoid confusion and that the work of distribution and recording of the bands and returns be done most effectively by this responsible central organization. Accordingly the experience of earlier investigators has been drawn upon and this more or less mechanical part of the work has been elaborated and standardized and a system of recording has been carefully worked out.

The Biological Survey is now considering plans to secure the permanent coöperation of Universities, Colleges and Agricultural Colleges throughout the country in bird banding and when these plans have been developed more carefully and a larger number of organizations and individuals have become interested in this effort the volume of data and results should accumulate rapidly.

Up to this time two principal methods of securing birds for banding have been followed. First, securing young birds just before they are ready to leave the nest, and second, taking adult birds by means of systematic trapping. The latter method is a more recent development of the work although it has been carried on with unusual success by Baldwin in Ohio and Georgia and valuable results have already been obtained without in any way injuring the birds.

Bird banding is not to be construed as offering encouragement in the shooting or taking of birds for the express purpose of recovering the bands but sooner or later many of these banded birds will fall into human hands. Every field observer, collector and sportsman should be on the lookout for banded birds and whenever one is found the number or, better still, the band itself if the bird is dead, should be forwarded to the United States Biological Survey, Washington, D. C., along with any pertinent data concerning the taking of the bird in order that the records may be kept as complete and up to date as possible.

Procedure to be followed in banding birds.

Any person or organization expecting to band birds must first secure, through the offices of the United States Biological Survey, a Federal permit authorizing the taking of migratory birds for scientific banding purposes only. The State Game Department concerned is then advised of the granting of such permit and a State permit is issued.

The proper permits having been secured, application should then be made to the Biological Survey for an assortment of bands of different sizes. In the writer's experience the sizes most commonly used are Nos. 1, 1A, 2 and 4, while occasionally a few of the large adjustable bands may

be employed to advantage. These bands are of thin pressed aluminum and each bears a number stamped in the metal. This number is registered in the files of the Biological Survey.

When the band is about to be placed the smallest sized band that will close around the tarsus of the bird without binding or chafing should be selected. The band should not hang loosely, since grasses, twigs or thorns might catch beneath it and cause inconvenience or even death to the bird, thereby frustrating the very thing for which the banding was done. It is often convenient to lap over the ends of the band instead of having the ends meet. Where this is done care should be taken to see that the edges of the lap are smooth and that the band does not pinch or bind. A pair of small round-nosed pliers or a pair of heavy tweezers is the best instrument for manipulating the bands.

Before placing the band the number that it bears should be carefully noted (do not trust to memory for this) along with the name of the species banded, the locality in detail, date, approximate age of the bird, name of the person doing the banding and any other remarks pertinent to the occasion. These data should be transferred to a book or card system maintained by the bander and in addition they must be transferred to a special sheet or schedule furnished by the Biological Survey; this should be sent in about every two to four weeks during the banding season.

Banding at the Michigan Biological Station.

One of the most feasible means of securing birds for banding is to detail the young birds, before they are ready to leave the nest, as bearers of these aluminum legends. Birds which are just hatched or which are only a few days old should not be banded. In our experience, we found it much better to wait until the birds were fully fledged. Although the tarsi of birds in this stage are more or less fleshy, they do not become larger so that allowance need not be made for increase in size.

This method of securing birds to be banded was pursued by the writer at the University of Michigan Biological

Station on Douglas Lake during July and a part of August, 1920, at which time he had charge of the work in Ornithology at the Biological Station. The Douglas Lake region offers many favorable habitants for nesting birds. Suitable nesting sites are present in great variety, food is plentiful and the habitations of man are comparatively few. However, it was surprising to discover the extraordinary mortality among young birds due to what we may term natural causes. In all probability our attention should not have been called to this as well as to many other interesting and instructive facts concerning young birds had it not been for the intimate contact experienced while banding these birds in the nest. For the students, the banding seemed to lend added interest and zest to their bird study work and they were the more easily encouraged to be on the alert for something new and different. Additional opportunity was thus given for observation and study on behavior, nesting sites, nest materials, etc., all of which afforded the student a wealth of first-hand knowledge as well as created interest in the marking of the birds themselves.

As a result of our activities which extended over a period of six weeks, a total of 115 birds belonging to 20 different species were banded. 106 of these represented nestlings occupying 39 nests; eight others were young birds which were captured after leaving the nest and the additional one was an adult bird.

Following is the list of species banded along with the number of individuals of each species.

Spotted Sandpiper (*Actitis macularia* (Linn.))—4 juvs.
Black-billed Cuckoo (*Coccyzus erythrophthalmus* (Wils.))—3 juvs.
Belted Kingfisher (*Ceryle alcyon* (Linn.))—6 juvs.
Northern Flicker (*Colaptes auratus luteus* Bangs)—1 juv.
Whip-poor-will (*Antrostomus v. vociferus* (Wils.))—2 juvs.
Nighthawk (*Chordeiles v. virginianus* (Gmel.))—1 ad.
Kingbird (*Tyrannus tyrannus* (Linn.))—3 juvs.
Crow (*Corvus b. brachyrhynchos* Brehm.)—2 juvs.
Cowbird (*Molothrus a. ater* (Bodd.))—3 juvs.
House Sparrow (*Passer d. domesticus* (Linn.))—4 juvs.

Chipping Sparrow (*Spizella p. passerina* (Bech.))—12 juvs.
Slate-colored Junco (*Junco h. hyemalis* (Linn.))—9 juvs.
Song Sparrow (*Melospiza m. melodia* (Wils.))—11 juvs.
Cliff Swallow (*Petrochelidon l. lunifrons* (Say))—14 juvs.
Cedar Waxwing (*Bombycilla cedrorum* Vieill.)—14 juvs.
Red-eyed Vireo (*Vireosylva olivacea* (Linn.))—4 juvs.
Redstart (*Setophaga ruticilla* (Linn.))—1 juv.
House Wren (*Troglodytes a. aedon* (Vieill.))—4 juvs.
Hermit Thrush (*Hylocichla guttata pallasi* (Cab.)—6 juvs.
Robin (*Planesticus m. migratorius* (Linn.))—11 juvs.

Reasons for banding birds.

It may now be proper to inquire what we may reasonably be expected to learn from the banding of birds. A good deal has been written about this in one place and another so that a brief resume is all that seems necessary at this time. In the following paragraphs the writer has attempted to set forth by a series of questions, followed in some cases by answers, something of what has been learned and what may be learned from the, as yet comparatively meager, information which is now at hand.

1. Do birds return to the same nesting area for several seasons?

An interesting record illustrating this point is given in a recent number of Bird-Lore (XXII, No. 4, 1920, 249). At Lake Forest, Illinois, on May 25, 1919, a male Rose-breasted Grosbeak was banded (No. 49510) and then permitted to escape. He mated and assisted in rearing a brood of young during the summer. On May 2, 1920, No. 49510 returned to the same place and was again taken by the individual who captured him the preceding summer.

Even with the limited data now at hand similar cases might be cited with other species of birds.

2. Do birds return to the same area to winter year after year?

Numerous instances of such returns might be cited but one of Baldwin's records will answer the question for at least one White-throated Sparrow. This individual was banded on February 27, 1915, at Thomasville, Georgia, No. 15053) and was taken in a trap the following March at the same place. During the interim the bird had presumably

spent the winter either in northern United States or in Canada. With the banding of more birds the likelihood will be greater of finding out *just where* in the north these or other birds nest.

3. Do nesting birds use the same nest and have the same mates season after season?

4. Do birds wander far from their nests in search of food?

5. Do certain birds rear a second brood in the same nest or in the same region as the first brood?

6. Do young birds return to breed to the spot in which they were reared?

No. 251, a half-fledged Robin, was banded at Kingston, Rhode Island, August 4, 1908, and was recovered April 9, 1909, at the same place not more than 200 yards from the orchard in which it was reared.

7. Do migrating birds stop off at the same feeding places *en route* year after year?

8. Do certain individual birds come and go over the same migration route?

Records of the movements of *individual* birds will give valuable information concerning some of the general problems of migration. However, some means must be available for positively identifying these individuals, a means to be attained only by banding or otherwise marking in some permanent manner.

9. What is the rate of travel (not flight) of certain species of birds?

10. What is the rate of geographical extension of a given species?

11. How long do birds live?

A young Common Tern was banded at St. Clair Flats Canal, Michigan, August 13, 1909 (No. 4590). The bird was recovered at Whitebread, Ontario, Canada, August 5, 1912.

A young bluebird banded at West Allis, Wisconsin,

July 5, 1909, was killed by a Shrike at Evansville, Illinois, April 1, 1912.

All these and a host of other interesting, inviting and important questions yet remain to be answered more fully. The opportunities are large; the workers are few; only a bare beginning has been made.

In conclusion—the results already obtained from bird banding have justified its practice; but the work should not devolve upon a limited number of persons. It should be made the duty and the effort of many individuals and organizations for it is only by carrying on the work in an extensive way that large and valuable results can be obtained. With the plan now headed by the United States Biological Survey renewed energy and activity should greet the efforts of this active and efficient branch of the Federal Department of Agriculture.

The writer would take this final opportunity of emphasizing to the members of the Wilson Ornithological Club the desirability of their coöperation in furthering the work of bird banding and in seeing to it that every banded bird which is secured shall have a "return" record sent to the proper authorities.

COMPARATIVE PERIODS OF NESTLING LIFE OF SOME NORTH AMERICAN NIDICOLÆ

BY FRANK L. BURNS

[CONTINUED FROM LAST ISSUE]

Again to show the fine detailed work of some of our observers, I have assembled a table exhibiting day by day the increase in weight (in grams) of some nestlings taken in 1906 by the late John F. Ferry, Lake Forest, Ill. The Cedar Waxwing study (Aug. 20-28) is incomplete, but the development and length of nestling life of the Cowbird (June 11-22), Yellow Warbler (June 21-July 2) and Wood Thrush (June 11-22), exhibit a relatively slower growth, considering size, than the Catbird (June 13-24) and the Brown Thrasher (July 8-19).

	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th
Cowbird . .				7.7	23.3		24.9		31.1	28.0		**
Cedar Waxwing	2.2	3.0	4.5	8.0	7.7				*			
	3.0	4.0	6.5	13.5	12.5	15.5	13.0		*			
	4.0	5.4	8.0	17.0	15.0	20.0			*			
	3.1	4.9	8.0	17.0	15.5	19.0	16.0		*			
Yellow Warbler				7.8	8.0	8.3	8.5					**
				6.2	7.2	8.3	7.3	7.7	9.4			**
Catbird . .		4.6			18.6	23.3	23.3	29.5	31.1	31.1	**	
ave. 3 yg.		6.2	15.5	15.5	15.5	22.0	25.2	27.2	28.5	**		
Brown Thrasher	3.1	7.5	9.0	12.0	17.5	21.2	25.5	40.5	51.5	47.5	49.5	**
	6.0	9.5	13.0	17.0	23.5	28.2	35.0	38.0	45.0	39.0	42.5	**
	8.2	8.5	11.0	15.5	22.0	27.5	34.0					**
Wood Thrush	6.5											
	3.1		6.2	18.6			24.9		37.3	34.2		**

* Found dead. ** Departed.

There is probably no other incident in the life history of our American birds in which our ornithologists are more profoundly ignorant than that of the approximate duration of nestling cycles. That of the Booby is said to be three months or more, that of the Gannet five or six months and of the Albatross ten months. Mr. A. C. Read has returned a nestling blank showing that the Ground Dove had completed a nestling cycle in 27 days. Mr. Charles H. Rogers, in New Jersey, and the writer, in Pennsylvania, found that of the Mourning Dove to be 30-32 days; a much shorter period than that of the somewhat nidifugous Whip-poor-will or Nighthawk, if one bases the completion of the cycle at the flying age. The Phoebe usually requires less than 40 days (Burns Ms., Vickers Ms.) and the Crested Flycatcher 51 days (McKennon Ms.). Some of our Sparrows, Mockers, and the Robin have a cycle of 30-35 days (Mss. of Burns, Ferry, Link, McKennon and Redfield) being two or more weeks less than the Baltimore Oriole and Purple Grackle. The House Wren and Bluebird complete in about 35-45 days, while the Bewick's Wren and Chickadee require 52-53 days (Wiley Ms., Link Ms.). The Warblers have a short cycle but as a rule are rather tardy nesters.

I regret that my material is altogether too scanty to more than suggest a few simple conclusions on the nestling life periods of our Nidicolæ.

First. There seems to be a consistant increase in the period of nestling development up to and including family groups, to correspond with the increase in size of the parent bird, and this must be taken into consideration in making

further comparisons. Considering size, the Hummingbird group appears to exceed all other groups, both in duration of incubation and the length of time the young remain in the nest: approaching like periods of the much larger-bodied and closely allied Swift.

Second. The normal nestling period of any species equals or exceeds the period of embryological development; i.e. when the period of incubation of a species is brief, the time in which the young occupy the nest is correspondingly brief and when the incubation of a species is of long duration the young are a long time helpless. Fright or restlessness may drive some species prematurely from the nest, especially ground or near ground nestling species like the Pelican, Cormorant, Ibis, Bittern, Heron, Dove, Vulture, Marsh Hawk, Short-eared Owl, Cuckoo, Horned Lark, Bobolink, Meadowlark, and many of the Sparrows, Warblers, Mockers and Thrushes, but they seldom travel far from the nest for some time.

Third. Young born naked, never acquiring natal down (gymnopædic, or psilopædic) including the Parrots, Cuckoos, Woodpeckers, Kingfishers, Hummingbirds and Swifts, develop slower physically than most nidicolous birds born with or acquiring a full or scanty clothing of natal down; though this is not so apparent in the American Cuckoos, since the early development of the feet of these birds enables them to clamber about at an early age; an important qualification for the perservation of the young of these large, bush-nesting birds. The European Cuckoo, however, vacates the nest only a few days before flight which occurs when about twenty-one days old (*Cf. Taylor, The Strand Magazine, xli, pp. 652-656*). It is noteworthy that the nestlings of most other species habitually breeding in situations affording extraordinary protection from natural enemies and the weather, or of species nesting in less protected situations but capable of defending the young from any ordinary danger, have young that are rather slow to depart from their nests and their departure signifies the completion of their fledgling, as well as nestling life. The impulse to vacate is not ordinarily

quickened by forces without and is therefore largely dependent upon maturity of fledgling life.

Fourth. Nothing seems more probable than that the Nidicolæ evolved from the Nidifugæ, and that if the economy of nature demanded it, all North American Nidifugæ, with the possible exception of the *Anseres,* Shore and Gallinaceous birds would readily yield to nidicolous habits and conditions.

An interesting writer (*Cf. Finn, Bird Behavior Psychical and Physiological*) regards the Passive or Nestling (Nidicolæ) type as degenerate, and states that with the exception of the Osprey, which has variegated down, all Nidicolæ appear self-colored, usually black, white, grey or buff, when they have down at all; while the Active or Chick (Nidifugæ) type are generally characterized by the more primitive striped, pied marked or spotted down.

The appended table of periods of nestling life was originally collated not only from my own notes and the manuscript of my friends, but from the pages of our leading American ornithological periodicals and many other ornithological works, for my own personal use in connection with bird banding, and though neither remarkable for the number of volumes searched or ideal for the purpose of comparison, it will at least call attention to the need of such data. Perhaps an ideal table would include the entire juvenal life from birth to the acquisition of equilibrium or wing power.

ALCIDÆ:

Tufted Puffin, remains in nest until fully feathered and able to take care of itself (Bent quoting Emerson, Life Histories North American Diving Birds, p. 85.)

Puffin, able to leave burrow in 4 or 5 weeks and follow parents to sea (Bent, Life Hist. N. A. Diving Bds., 92.)

Horned Puffin, leave nest before able to fly (Bent quoting Turner, Ibid., 101.)

Rhinoceros Auklet, nearly full grown (Willett, Bird-Lore, xiv, 423); evidently estimated at about 30 days (Bent quoting Heath, Life Hist. N. A. Diving Bds., 106.)

Cassin's Auklet, fully 21 days, until able to fly (Heath, Condor, xvi, 34; Bent, Life Hist. N. A. Diving Bds., 113.)

Crested Auklet, until able to fly, about the last of August or later (Bent, Ib., 122.)

Whiskered Auklet, until fully fledged (Bent quoting Stejneger, Ib., 125.)

Least Auklet, data seems to indicate 4 or 5 weeks (Bent, Ib., 180.)

Black Guillemot, about 25 days (Bent quoting Walker, Ib., 208); for a long time, until fully fledged or nearly so (Bent, Ib., 159.)

Mandt's Guillemot, develops slowly (Bent, Ib., 164.)

Pigeon Guillemot, until fully fledged (Bent quoting Emerson, Ib., 170.)

Dovekie, the young begin hatching about the middle of July and the first birds come off the nests about the middle of August (Bent quoting Ekblaw, Ib., 218.)

DIOMEDEIDÆ:

Laysan Albatross, 6 months before flying (Fisher, Auk, xxi, 19.)

PORCELLARIIDÆ:

Audubon's Shearwater, large downy young (Plath, Bird-Lore, xv, 349.)

Storm Petrel, until fully fledged and able to fly (Macgillivray, History of British Birds, v, 468.)

Leach's Petrel, possibly 60 days or more (Knight, Journal Maine Ornithological Society, ii, 5.)

Black Petrel, more than 14 days (Van Rossem, Condor, xvii, 77.)

Soccoro Petrel, same as Black Petrel (Van Rossem, Ib.)

Fork-tailed Petrel, nearly full grown (Willett, Bd.-Lore, xiv, 423.)

PHAETHONTIDÆ:

Yellow-billed Tropic Bird, about 60-62 days (Gross, Auk, xxix, 60; Plath, Wilson Bulletin, No. 95, 50.)

SULIDÆ:

Booby, approximately 3 months from laying of egg to flight of young (Chapman, Camps and Cruises of an Ornithologist, 217.)

Gannet, appears to remain in the nest for ten weeks, and after that it stands on its ledge, or even on its old nest, for two or three weeks more (Gurney Ms.)

ANHINGIDÆ:

Anhinga, born naked, will jump from the nest to the water, dive and swim, at a very early age, not over three weeks, but often stays in the nest or close by for eight or nine weeks, as near as I have noted (Bayard Ms.)

PHALACROCORACIDÆ:

Cormorant, apparently considerably over a month (Audubon,

Ornithological Biographies); until more than half grown (Knight, J. M. O. S., ii, 37.)

Double-crested Cormorant, long period (Palmer, Condor, xviii, 123); on July 9th the young were in the egg or very small, none were out of the nests; on July 23rd they were full grown and running after their parents to be fed. Within a day or so a few began trying their wings and descending to the water 200 or 300 feet below, but it was probably considerably later before they had all flown, later than August 6th (Townsend Ms.)

Florida Cormorant, almost full grown (Phillips, Auk, xxvii, 314); until able to fly, about eight or nine weeks (Baynard Ms.)

Brandt's Cormorant, at least over 25 days (Loomis, Calif. Water Birds, No. 1, 219.)

Pelagic Cormorant, nearly full grown (Willett, Bd-Lore, xiv, 428.)

PELECANIDÆ:

American White Pelican, about 42 days before flight (Finley, Condor, ix, 38); 14 days in nest (Skinner, Ib., xix, 181.)

Brown Pelican, 10 weeks before flight (Chapman, Camps and Cruises of an Ornithologist, 94.)

PLATALEIDÆ:

Roseate Spoonbill, at least 30 days (Chapman, Bd.-Lore, xvi, 217.)

IBIDIDÆ:

White Ibis, 14 days in nest and 42 days before flight (Baynard, Bluebird, vii. 16.)

Glossy Ibis, same as White Ibis (Baynard, Wils. Bul., No. 84, 103.)

CICONIIDÆ:

Wood Ibis, about 8 or 10 weeks before leaving nesting tree (Baynard Ms.)

ARDEIDÆ:

American Bittern, about 14 days (Chapman, Bd.-Lore, i, 149; Tabor, Ib., vii, 168; Rockwell, Condor, xiv, 119.)

Least Bittern, about 9 days (Potter, Cassinia, xx, 14) 7 days, leaving nesting site in 13 days (Ib., xxiii, 30.)

Great Blue Heron, about 35 days (Cameron, Auk, xxiii, 256; Carriger and Pemberton, Condor, x, 81; Huey, Ib., xvii, 59.)

Egret, 11 or 12 weeks before independent of parents (Baynard Ms.)

Green Heron, about 14 days (Wheelock, Auk, xxiii, 432.)

Anthony's Green Heron, more than 15 days (Huey, Condor, xviii, 59.)

Black-crowned Night Heron, about 20 days (Burns Ms.); less

than 30 days (Vinal, Bd.-Lore, xix, 164); able to leave in 21 days, stayed 35 days (Rockwell, Condor, xii, 118.)

COLUMBIDÆ:

Band-tailed Pigeon, about 30 days (Bendire quoting Bryant, Life Hist., I, 127.)

White-crowned Pigeon, approximately about 30 days (Bendire, Ib., 131.)

Passenger Pigeon, about 14 days (Deane quoting Whittaker, Auk, xiii, 236.)

Mourning Dove, 10-12 days (Burns and Rogers Mss.; Gifford, Condor, xi, 85, and Bird News, No. 2, 8.)

White-winged Dove, between 21 and 28 days (Wetmore, Condor, xxii, 141.)

Ground Dove, 10 days (Read Ms.)

CATHARTIDÆ:

California Vulture, over 6 months (Finley, Condor, xii, 5).

Turkey Vulture, about 6 weeks (Jackson, Bd.-Lore, v, 186.)

Black Vulture, flight in 14 weeks (Baynard, Bluebird, vii. 31.)

FALCONIDÆ:

White-tailed Kite, about 30 days (Peyton, Condor, xvii, 230.)

Marsh Hawk, 33-34 days (Saunders, Condor, xv, 103; Peabody, Bd.-Lore, ii, 49.)

Sharp-shinned Hawk, 22-24 days (Rust, Condor, xvi, 14); 32 days (Willard, Ool., 8, 63.)

Cooper's Hawk, 33 days (Burns Ms.)

American Goshawk, 60 days (Knight, Bds. Me., 225.)

Red-tailed Hawk, about 60 days (Seaton, Auk, ii, 22.)

Red-shouldered Hawk, 25 days (Hegner, Bd. Lore, viii, 151.)

Texas Red-shouldered Hawk, about 30 days (Willett, Auk, xxxii, 323.)

Swainson's Hawk, 28-35 days (Wheelock, Bds. Calif., 153; Finley, Auk, xxx, 174; Ib., pl. xiii); 28-35 days (Cameron, Auk, xxviii, 174.)

Broad-winged Hawk, 41 days (Burns, Wils. Bul., No. 76-77, 268, also Ib., No. 37, 90.)

American Rough-legged Hawk, about 42 days (Bendire, Life Hist., I, 258.)

Ferruginous Rough-leg, about 54 days (Cameron, Auk, xxxi, 163.)

Golden Eagle, 60-68 days (Finley, Condor, viii, 1; Cameron, Auk, xxii, 162, and xxv, 251); about 11 weeks (Macpherson, Home Life of the Golden Eagle.)

Bald Eagle, more than 42 days (Hoxie, Auk, xxvii., 452; Baynard, Wils. Bul., pl. between 122 and 123); about 65 days (Bailey,

Bds. Va., 120); probably at least 90 days (Oberholser, U. S. Dept. Agri. Biol. Survey, bul. 27, 9.)

Black Gyrfalcon, approx. over 60 days (Bendire quoting Turner, Life Hist., I, 187.)

Duck Hawk, 40-44 days (Allen and Knight, Bd.-Lore, xv, 6; Dixon, Condor, x, 198; 41 days (Richards, Auk, xxxvi, 350.)

American Sparrow Hawk, 27-29 days (Sherman, Auk, xxx, 417.)

PANDIONIDÆ:

American Osprey, about 28 days (Chapman, Bd.-Lore, x, 155; Wheelock, Bds. Calif., 165); 35-45 days (Howe, Auk, xii, 389; Skinner, Condor, xix, 120); about 42 days (Chapman. Camps and Cruises of an Ornithologist, 52.)

STRIGIDÆ:

American Barn Owl, 56 days (Finley, Am. Bds., 81.)

BUBONIDÆ:

American Long-eared Owl, about 28 days (Burns Ms.); about 35 days (Wheelock, Bds. Calif., 169.)

Short-eared Owl, 14 days, though only a few feet from the nest for a month longer (Saunders, Condor, xiv, 120.)

Florida Barred Owl, about 42 days (Bendire quoting Ralph, Life Hist. I, 342.)

Screech Owl, 30-32 days (Sherman, Auk, xxviii, 166.)

California Screech Owl, about 35 days (Bendire quoting Emerson, I, 342.)

Rocky Mountain Screech Owl, at least 30 days (Rockwell, Condor, ix, 144.)

Great Horned Owl, 44-46 days (Keys, Condor, xiii, 1.)

Pacific Horned Owl, 49 days (Dixon, Condor, xvi, 53.)

Western Horned Owl, about 56 days (Cameron, Auk, xxiv, 268.)

PSITTACIDÆ:

Carolina Paroquet, more than 45 days (Nowotny, Auk, xv, 31.)

CUCULIDÆ:

Road-runner, less than 7 days, and in 30 days able to care for itself (Sutton, Bd.-Lore, xiii, 58, and xv, 324.)

Yellow-billed Cuckoo, 7 days (Herrick, Jour. Exp. Zoöl., ix, 171; Pop. Sci. Monthly, 77, 95; Burns Ms.): 9 days (Bayliss, Auk, xxxv, 162.)

California Cuckoo, less than 14 days (Jay, Condor, xiii, 69.)

Black-billed Cuckoo, 6-7 days, climbing until the 15th day (Saunders, Bd.-Lore x, 205; Shuver, B.M.O.C., ii., 16; Herrick, Pop. Sci. Monthly, 77, 128.)

ALCEDINIDÆ:

Belted Kingfisher, 24-28 days (Baily, Bd.-Lore, ii, 77; Herrick,

Pop. Sci. Monthly, 77, 133; Wheelock, Auk, xxii, 70; Finley, Am. Bds., 146.)

PICIDÆ:

Hairy Woodpecker, about 21 days (Bendire, Life Hist., i, 49.) Burns Ms.)

Harris's Woodpecker, 21-28 days (Wheelock, Bds. Calif., 365.)

Cabanis's Woodpecker, nearly 28 days (Wheelock, Ib., 367.)

Downy Woodpecker, at least 11 days (Burns Ms.)

Nuttall's Woodpecker, 21-28 days (Wheelock, Bds. Calif., 365.)

White-headed Woodpecker, nearly 28 days (Wheelock, Ib. 367.)

Arctic Three-toed Woodpecker, 28-35 days (Wheelock, Ib., 369)

Yellow-bellied Sapsucker, more than 10 days (Bolles, Auk, ix, 109.)

Red-breasted Sapsucker, 24 days (Wheelock, Bds. Calif., 464.)

Northern Pileated Woodpecker, evidently about 30 days (Carriger and Wells, Condor xxi, 155); nearly 42 days (Wheelock, Bds. Calif., 373.)

Red-headed Woodpecker, about 35 days (Potter, Bd.-Lore, xiv, 216.)

California Woodpecker, about 20-21 days (Myers, Condor, xvii, 183); about 24 days (Wheelock, Bds. Calif., 378.)

Lewis's Woodpecker, about 21 days (Bendire, Life Hist., ii, 120); 21-28 days (Wheelock, Bds. Calif., 466.)

Flicker, 26-28 days (Sherman, Wils. Bul. 72-73, 133.)

Red-shafted Flicker, nearly 21 days (Wheelock, Bds. Calif., 190.)

MICROPODIDÆ:

Chimney Swift, about 26-31 days, including time spent close by nest (Bendire quoting Widmann, Life Hist., ii. 179; Honeywell, Bd.-Lore, xi, 266; Knight, Bds. Me., 302; Burns Ms.)

White-throated Swift, about 21 days (Hanna, Condor, xi, 89.)

TROCHILIDÆ:

Blue-throated Hummingbird, 18 days (Brewster, Auk, vii, 206.)

Ruby-throated Hummingbird, 22 days (Metcalf, Ool., 28, 163; Hitchcock, Bd-Lore, xix, 79); 28 days (Smith, Bird-Lore, xxii, 275.)

Costa's Hummingbird, 17 days (Wheelock, Bds. Calif., 422.)

Black-chinned Hummingbird, 16 days (Lacey, Auk, xxviii, 210.)

Anna's Hummingbird, 21 days (Bowles, Colnor, xii, 127; Bryan, Ib., iv, 35; Wheelock, Bds. Calif., 424.)

CAPRIMULGIDÆ:

Whip-poor-will, two or more days if undisturbed (Job, The Sport of Bird Study, 108.)

Nighthawk, a few days (Job, Ib., 110); able to fly in 18 days (Herrick, Home Life of Wild Birds, 81.)

TYRANNIDÆ:

Kingbird, 18 days (Weldon, Bd.-Lore, viii, 122; Herrick, Home Life of Wild Birds, 28.)

Crested Flycatcher, 18-20 days (Knight, Bds. Me., 311; McKinnon Ms.)

Ash-throated Flycatcher, 16 days (Wheelock, Bds. Calif., 326.)

Phœbe, 15-16 days (Knight, Bds. Me., 313; Vickers Ms.; Morrell, J.M.O.S., iv, 32; Saunders, Condor, xvi, 131); 20 or 21 days (Clise, Bd.-Lore, xx, 378.)

Say's Phœbe, 16-18 days (Saunders, Condor, xvi, 134.)

Black Phœbe, 16-18 days (Jewett, B.C.O.C., i, 13.)

Olive-sided Flycatcher, about 21 days (Bendire, Life Hist., ii, 285.)

Wood Pewee, 16-18 days (Bendire, Ib., ii, 291; Knight, Bds. Me., 317.)

Traill's Flycatcher, about 14 days (Bendire, Life Hist., ii, 309.)

Alder Flycatcher, 13 days (Knight, Bds. Me., 320; Stanwood, J.M.O.S., xii, 5.)

Least Flycatcher, 13-15 days (Knight, Bds. Me., 322; Herrick, Bd.-Lore, iv, 80.)

Wright's Flycatcher, 14 days (Wheelock, Bds. Calif., 445.)

Vermillion Flycatcher, 16 days (Wheelock, Ib., 470.)

ALUDIDÆ:

Prairie Horned Lark, 7 days (Terrill, Wils. Bul., 100, 138; about 10 days (Judd, Bd.-Lore, x, 129.)

Pallid Horned Lark, 9 days (Wheelock, Bds. Calif., 297.)

Dusky Horned Lark, 6 or 8 days (Kennedy, Condor, xv, 136.)

Streaked Horned Lark, 7-13 days, flying in 19 days (Merrill, Auk, v, 260.)

(TO BE CONCLUDED IN NEXT ISSUE)

THE WILSON BULLETIN

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The editor will be away from home from June 23 to September 15, but mail will be attended to during that time if addressed to 352 West College Street, Oberlin, Ohio. Requests relating to completion of your files or for back numbers ought to be deferred until the return of the editor. Much of the information addressed to the editor can as well be secured from the secretary, A. F. Ganier, 2507 Ashwood Avenue, Nashville, Tenn.

FIELD NOTES

TWO BACHMAN'S SPARROW'S NESTS NEAR BARDSTOWN, KENTUCKY

Though Bachman's Sparrow (*Peucæa æstivalis bachmani*) is by no means a rare bird in certain favorable localities near Bardstown the finding of a nest has, until this year, been one of the unsolved problems concerning the birdlife of this locality. On April 26th, 1921, and the two days following, it was my good fortune to observe a pair of these sparrows nest building. The location was the corner of a wheat field; a clover field adjoined it on one side, and a narrow strip of pasture land bordered by a thicket extended along the other. At the time I was busy with team "snaking" out poles from a clearing in the thicket. The sparrows came to the edge of this clearing for nesting material and apparently were not at all disturbed by our operations. The male generally accompanied the female as she carried the nesting material, and, frequently, he sang while she searched over the ground for the piece of dead grass suited to her needs. But the song seemed to come from far out in the wheat field, yet the bird was only ten yards away. Once the female came within twenty-five feet of the team to get a piece of grass, and many times we passed ten or twelve yards distant from the nest while the female sat on the fence nearby. On May 2nd the first egg was laid, and the following day there was a second egg and also a Cowbird'e egg. Two days later the eggs had disappeared and my hopes for a set of Bachmn's Sparrows disappeared with them. The nest was five yards from the wire fence and about three yards back in the wheat. It

was very bulky, composed mainly of grass, with some shreds from corn stalks, and a few horse hairs in the lining. A row of wheat supported the nest at the rear, the next row was several inches in front of it; there was no other vegetation about the nest.

The afternoon of May 16th Mr. Albert F. Ganier and myself were working over a clover and timothy field at my home place in hopes of locating a nest of the Grasshopper Sparrow. The proverbial barefoot boy appeared on the scene, and when he learned that we were looking for bird's nests told us of a "ground sparrow's" nest in an adjoining field, which we decided to investigate. Arriving at the nest we found one of the parent birds about to feed the young, and were able to get a good look at it and to satisfy ourselves that it was a Bachman's Sparrow. The nest held four birds about six days old. The location of the nest was very different from the first. It was under a piece of brush which had been thrown in a "gully" to check the action of the rain, on an old worn out, washed away piece of land. There was little vegetation about the nest, only a little grass and some weeds and briers growing up through the brush; and surrounding this the ground was almost bare for a space several feet wide. There was a great contrast between the situation and surroundings of these two nests and both are different from the situation in which Mr. Ganier has found this species nesting at Nashville, Tennessee, as described and illustrated in the March issue of the Wilson Bulletin.

Ben J. Blincoe.

Bardstown, Ky.

STARLINGS NEST AT HURON, OHIO

During February, 1921, I had had reports that there were some strange blackbirds staying at Mr. Carl Heimberger's farm about two miles southwest of town, but it was March 13th before I had a chance to investigate.

On that day, however, my wife and I walked out that way on one of our hikes and found eight or ten starlings. They came from the cupola of the barn one or two at a time and there seemed to be more inside. The long yellow bill and speckled plumage identified them at once. Mr. Heimberger stated that this was the second winter these birds had been around the barn. The winter before there had been about six or eight, but they had left in the spring and returned again in the fall at the approach of cold weather. They had increased in number until in February there must have been nearly two hundred. They did not stay around in the daytime, but would leave and return in the evening about four o'clock, collecting first in some tree and then going to the cupola of the barn to roost. During the week following our visit all the starlings but one pair left and these seemed to be investigating the hollow stub of a branch on an old apple tree near the barn. On

April 21st Mr. Helmberger reported four pale blue eggs in a nest about a foot below the opening, and on May 1st I found the nest with five eggs and the female incubating. She left the nest at our approach, but was back in the tree when we withdrew and would not go on the nest as long as we were in sight.

This seems to be the first reported nesting for Ohio.

H. G. Morse.

Huron, Ohio.

(On May 15 a Starling in full plumage and full voice was noted on Catawba Island, a few miles east of Port Clinton, Ohio. This bird was seen by three persons, including the writer, who are familiar with the species.—Lynds Jones.)

DENVER BIRDS

Since the last list published, of Denver birds, in this Bulletin (September, 1917), the writer has seen the following species, and subspecies within the corporate limits of this city:

Pied-billed Grebe (*Podilymbus podiceps*)—One appeared in a small lake in Washington Park April 27, 1920, and remained thereabouts all summer; another (or the same individual) appeared in the same place this spring.

Ring-billed Gull (*Larus delawarensis*)—One seen in Washington Park April 24, 1920.

Buffle-head Duck (*Charitonetta albeola*)—Two males, and two females were seen in Washington Park October 26, 1919.

Lesser Yellow-legs (*Totanus flavipes*)—One seen in Washington Park April 24, 1920.

Batchelder's Woodpecker (*Dryobates pubescens homorus*)—One noted in Cheeseman Park September 29, 1920, and on April 3, 1921.

Olive-sided Flycatcher (*Nuttallornis borealis*)—One seen in Cheeseman Park May 13, 1921.

Western Flycatcher (*Empidonax difficilis difficilis*)—One detected in Cheeseman Park September 3, 1919.

Traill's Flycatcher (*Empidonax trailli trailli*)—One seen on September 1 and 2, 1917, and on September 26, 1920, all in Cheeseman Park.

Clarke's Crow (*Nucifraga columbiana*)—A pair remained in the neighborhood of the Country Club and Cheeseman Park from January 1 to April 30, 1920.

Townsend's Warbler (*Dendroica townsendi*)—Four were seen in Cheeseman Park by Dr. A. K. Fisher and the writer on September 23, 1920.

Pileolated Warbler (*Wilsonia pusilla pileolata*)—One seen in Cheeseman Park September 5, 1917, and on September 14 and 23, 1920, all in Cheesman Park.

Olive-backed Thrush (*Hylocichla ustulata swainsoni*). All seen in Cheeseman Park June 2, 1920.

These are the first records for Denver, judging by published records, and the writer's experience; the Denver List, mentioned above, gave 187 species and subspecies. The present additions swell the list to 199.

W. H. Bergtold.

1159 Race Street, Denver, Colo.

THE LONG-BILLED MARSH WRENS OF NEBRASKA

Long-billed Marsh Wrens (*Telmatodytes palustris* subspp) occur very commonly in suitable localities over practically the whole of Nebraska, at least as migrants. At Lincoln they arrive in early to middle April (April 6, 1913; April 14, 1917), become numerous during latter April and early May, and pass on by the middle of May (May 12, 1918; May 13, 1917). Early in September they again appear (Sept. 2, 1919; Sept. 8, 1908), become numerous later in that month, and then mostly pass on, a few lingering until late October (Oct. 23, 1909). This status is typical for this species over the greater part of southern Nebraska, except that in very favorable localities a pair may now and then remain to nest (cf. Tout, *Proc. N. O. U.*, ii, p. 45). In the marshy tracts along the Missouri River these birds nest more commonly, and have been found occasionally nesting near Omaha in June and July (*vide* Samuel Aughey, I. S. Trostler, L. Skow, etc.). About many of the lakes of the Sandhill Region of Nebraska they now nest abundantly (cf. J. S. Hunter, *Proc. N. O. U.*, ii, p. 83), and formerly did so much farther to the eastward, even to Holt County.

When Ridgway described *T. p. iliacus*, the Prairie Marsh Wren, in 1903, largely restricting the typical Long-billed Marsh Wren, *T. p. palustris*, to the region east of the Alleghenies, our Nebraska Long-billed Marsh Wrens were, of course, all referred in 1904 to the newly differentiated form (*Prelim. Rev. Birds Nebraska*, p. 110).

But as specimens of migrating Long-billed Marsh Wrens were collected at Lincoln from time to time, it became evident that two distinct forms were passing through this locality each spring and fall. The less common of these two forms, apparently present for only a comparatively short period in April and September (April 20-24; Sept. 12-28), has the sides of the back, rump and upper tail coverts ochraceous tawny or russet, with the sides and flanks cinnamon buff, and obviously represents *T. p. iliacus* Ridgway. But the more common form has the sides of the back, rump and upper tail coverts darker and less reddish, about cinnamon brown, and the sides and flanks deep wood brown, thus agreeing in coloration with *T. p. palustris* (Wilson). This form is known to arrive in latter April and lingers into May, then reappears in early September and remains until late October or early November (April 29-May 6; Sept. 8-Oct. 23, or Nov. 2).

However, since Ridgway in 1904 gave the range of *T. p. palustris*

as "chiefly east of the Allegheny Mountains, west to western New York and Pennsylvania," and that of *T. p. iliacus* as from western Indiana westward over the prairies and plains, which distribution was practically confirmed by the A. O. U. Committee in 1910, it seemed highly unlikely that our common form of this species could be *palustris*, yet obviously they were different from *iliacus*. To answer this question a small series of specimens of each form was sent to Dr. Oberholser for opinion, and he has returned all of the lighter birds marked "*iliacus*" and the darker ones marked "*palustris*," meaning, no doubt, that under the currently recognized subspecies the Nebraska birds should be thus referred. This will make *T. p. palustris* an addition to the list of the birds of the state.

It must be noted, however, that Nebraska "*palustris*" have on the average a slightly longer wing and tail and a distinctly shorter culmen than typical *palustris* as defined by Ridgway, and also that Nebraska "*iliacus*" have a shorter culmen than the measurements of *iliacus* given by Ridgway, though in other measurements they are practically the same. Thus the supposed slight differences in size between the two forms pratically disappear so far as Nebraska specimens are concerned, as the following table will show:

	Length	Wing	Tail	Depth of Cul.	Bill	Tar.
"*palustris*"						
Lincoln, Nebr., May 6, 1919 ♂ Ad.	125	53.0	45.0	13.0	3.1	19.5
Lincoln, Nebr., Sept. 23, 1919 ♂ Ad.	122	53.0	42.0	13.5	3.5	20.0
Lincoln, Nebr., Apr. 29, 1916 ♂ Ad.	119	52.5	45.5	14.2	3.4	19.0
Lincoln, Nebr., May 5, 1917 ♂ Ad.	126	52.0	43.0	13.4	3.0	20.0
Nebr. City, Nebr., Nov. 2, 1901 ♂ Ad.	120	51.0	39.0	12.0	3.0	18.5
Lincoln, Nebr., Sept. 8, 1908 ♂ Ad.	122	50.0	41.0	12.0	3.0	18.5
Average of 6 ♂ ♂:	122	51.9	42.6	13.0	3.1	19.0
"*iliacus*"						
Havelock, Nebr., Apr. 20, 1901 ♂ Ad.	127	54.0	47.0	13.1	3.0	19.0
Lincoln, Nebr., Sept. 28, 1901 ♂ Ad.	127	52.5	46 5	13.0	3.0	18.5
Lincoln, Nebr., Apr. 24, 1903 ♂ Ad.	120	52.5	43.8	13.0	3.3	18.5
Lincoln, Nebr., Sept. 12, 1902 ♂ Ad.	117	51.5	42.0	13.0	3.2	18.0
Lincoln, Nebr., Sept. 12, 1902 ♂ Ad.	117	51.5	42.0	13.0	3.2	18.0
Average of 5 ♂ ♂:	122	52.5	44.3	13.0	3.1	18.5

Measurements of adult ♂ ♂ given by Ridgway:

	Length	Wing	Tail	Culmen
T. p. palustris	103-117.5 (110)	48-54 (50.6)	38.5-46.5 (41.4)	14-15.5 (14.7)
T. p. iliacus	110-127.5 (116.1)	49.5-56 (52.3)	40.5-46.5 (43.6)	13-15.5 (14-4)

Measurements of adult Nebraska ♂ ♂:

Nebraska "*palustris*" 119-126 (122)	50-53 (51.9)	39-45.5 (42.6)	12-14.2 (13.0)
Nebraska "*iliacus*" 117-127 (122)	51.5-54 (52.5)	42-47 (44.3)	13-13.1 (13.0)

It is not known which form is the local breeder, as unfortunately no specimens of breeding birds are at hand to determine this point. Very likely some future reviser of the Long-billed Marsh Wrens may work out more accurately the breeding ranges of the several subspecies, and may possibly separate our Nebraska "*palustris*" from the *palustris* defined by Ridgway.

MYRON H. SWENK.

Lincoln, Nebraska.

THE SUBSPECIES OF NEBRASKA SAVANNAH SPARROWS

Nebraska ornithologists have recognized since 1896 that two subspecies of the Savannah Sparrow migrated through the state, but there has been much confusion as to the distribution of the two subspecies, due largely to faulty identifications.

In 1904 the data at hand was interpreted to indicate that *P. s. savanna* was an abundant migrant over eastern Nebraska, west to about the 99th meridian, arriving in late March or early April, mostly passing northward to breed, but occasionally to be seen in the state during the summer and possibly breeding, and again migrating through eastern Nebraska in October; while *P. s. alaudinus* was regarded as migrating over the entire state and possibly breeding westwardly, its dates being about the same as those of *P. s. savanna* (*Prelim. Rev. Birds Nebraska*, pp. 85-86).

In 1910, however, Dr. Joseph Grinnell divided the former subspecies *alaudinus*, restricting that name to the birds breeding in "the vast interior of northwestern North America, from Bering Sea and Kotzebue Sound to the Mackenzie region," while the birds breeding in the Great Basin he named *P. s. nevadensis* (*Univ. Cal. Pubs. Zoölogy*, v. pp. 311-318). This subspecies was accepted by the A. O. U. Committee in 1912. In 1915 Dr. L. B. Bishop showed that the birds breeding in North Dakota and wintering in Texas were also *nevadensis* (*Condor*, xvii, pp. 186-187). This led to the suspicion, which was confirmed by a study of specimens, that probably the birds we had been calling *alaudinus* were really *nevadensis*.

To make the point certain, a series of skins was sent to Dr. H. C. Oberholser for naming. In this series were sixteen skins from southeastern Nebraska, mostly from the vicinity of Lincoln, and of these Dr. Oberholser returned two marked *savanna* and fourteen marked *nevadensis*. In our entire series of twenty-nine specimens from eastern Nebraska, five are *savanna* and twenty-four *nevadensis*. This proportion may be regarded as representing fairly accurately the relative abundance of these two subspecies during migrations along the 97th meridian in Nebraska. The dates on the specimens of *nevadensis* are March 22, April 5, 19, 20, 21, 23, 24 and 28, May 1, September 10 and 14, October 8, 9, 10, 12, 14, 16 and 19 and November 2, there being two with dates October 10, 16 and 19 and three with the date October 14. The five specimens of

savanna were collected March 19, April 9 and 20 and October 5 and 19. Savannah Sparrows neither breed nor winter at Lincoln, but they summer occasionally at Omaha and may breed there. I. S. Trostler has stated that they breed at Omaha uncommonly, June 1 to 12. Our field data shows them as appearing in the spring at Lincoln March 17 to 30 becoming abundant April 1 to May 12, and then scatteringly present until May 27. In the fall they reappear September 5 to 30, are abundant October 1 to 20, and then in declining numbers to November 7. With little doubt these dates apply chiefly to *nevadensis*.

Our specimens indicate *P. s. savanna* as a migrant in eastern Nebraska west to Lincoln, appearing about as early as *nevadensis* (Dunbar, Nebr., March 19). No specimens of *savanna* from west of Lincoln have been examined. In the irrigated North Platte valley of western Nebraska *P. s. nevadensis* summers (Mitchell, July 7), and probably breeds in the grassy margins of the seepage ponds there, but no nests have been found.

We must, therefore, revise our previous idea of the distribution of Nebraska Savannah Sparrows somewhat. *P. s. savanna* is evidently a rather uncommon migrant and possible breeder in eastern Nebraska, occurring west only to about the 97th meridian, while *P. s. nevadensis* is an abundant migrant over the state, summering and probably breeding westwardly.

Myron H. Swenk.

Lincoln, Nebraska.

NOTES—HERE AND THERE

Conducted by the Secretary

The Secretary would appreciate receiving the names of all those having a complete, or nearly complete file of Wilson Club publications. Due to the limited circulation of early volumes it is likely that there are fewer complete sets in existence than of the A. O. U. or Cooper Club publications. Our Editor has a small stock of back numbers on hand which may be ordered from him for completing files.

The Indiana Audubon Society has put itself into more tangible form by issuing the first of what is planned to be a series of bulletins. We understand that credit for this first number, issued in March, is chiefly due to Mr. Frank C. Evans, the Secretary. Its 24 pages contain a number of articles of merit, appropriately illustrated and typographically attractive as well.

Dr. Albert H. Wright of the Cornell Zoölogical Laboratory, and co-author, with Mr. Francis Harper, of a paper on the "Birds of the Offekinoke Swamp," in Georgia, is spending the spring again in the swamp. He is supplementing his previous studies as a ba-

sis for papers on other phases of the zoölogy of the region. Mr. Harper is also with Dr. Wright.

Dr. Lynds Jones will spend the summer months on another of his transcontinental bird trips. He leaves Oberlin on June 23, with a party of sixteen and travels by auto via the Iowa lakes, through North Dakota and Montana, to and including the Yellowstone, from thence by way of Flathead Lake and Glacier Park, over the Cascade to Ranier Park and the coast. The party will there disband and Dr. Jones and his son have planned to make a trip to Alaska following this auto trip. The party will spend its time studying the ornithology of the regions traversed. Fortunate indeed are those who are able to go with our Editor on these tours.

The annual meeting of the Nebraska Ornithological Union was held at Omaha on May 13th and 14th.

The organization of various state ornithological clubs is a most commendable step toward the encouragement of serious bird study and the coöperation of such workers in limited areas. Kentucky has a most promising group of earnest bird students, who have just formed the Kentucky Ornithological Society. This organization limits its members to the few who are doing thorough and systematic bird study and is entirely distinct from the several local Audubon Societies now functioning in that state. The officers are Dr. R. S. Tuttle of Lexington, President; Prof. Gordon Wilson of Bowling Green, vice-president; Benj. J. Blincoe of Bardstown, editor and curator; Brasher C. Bacon of Madisonville, secretary-treasurer.

John Burroughs, with whose writing on birds and popular natural history our readers are familiar, died on March 29th. Mr. Burroughs was in his eighty-fourth year and was perhaps the most widely read of all nature writers.

The Secretary spent the last half of May among the swamps and lakes of western Tennessee, listing and studying the birds of that area. Extensive drainage operations have eliminated many of the marshes and smaller lakes where water birds formerly bred.

The joint spring meeting of the Indiana Academy of Science, the Indiana Audubon Society and the Nature Study Club of Indiana, was held at Indianapolis on May 27th and 28th. The two days were spent afield visiting points near the city of especial interest to the naturalist. A local committee arranged a most attractive program and it is needless to say that the meeting afforded an opportunity for field study and getting acquainted that was most commendable.

H. E. Wheeler of Conway, Arkansas, has been specializing this spring on the nesting habits of the Pileated Woodpecker. He succeeded in finding six breeding pairs and added to his collection two nice sets, of four and five eggs respectively.

One of the more interesting and useful tasks undertaken by the Biological Survey is the determination of our bird population by means of a considerable number of "bird counts" or censuses. These are taken by volunteer observers, over restricted areas, during the breeding season. Just at this time The Survey is desiring to extend the scope of this work and our members may perform a service by coöperating. Full instructions and report blanks may be secured upon written application.

The Chicago Ornithological Club has secured permanent quarters in one of the session rooms of the Crerar Library. This is indeed a fortunate selection and the C. O. C. now enjoys a convenient meeting place in the downtown "Loop."

Our membership teams have slowed down a bit in their work, doubtless due to the pressing call of the outdoors for their leisure time. From the results already obtained it is evident that our next year's list will show a substantial gain, and we hope to cut the usual "delinquent list" to a minimum. If members will communicate the names of good membership material to the Secretary it will be doing a good turn for the Club.

Mr. Wm. I. Lyon of Waukeegan, Ill., is one of our most enthusiastic and successful bird-banders. Last year he banded no less than 360 birds, most of which were caught in traps. In the excellent spring number of the Illinois Audubon Bulletin he gives an outline of the methods he used and some of the results obtained.

MINUTES OF THE TWENTY-SECOND ANNUAL MEETING OF THE NEBRASKA ORNITHOLOGISTS' UNION

The twenty-second annual meeting of the Nebraska Ornithologists' Union was held at Omaha, Nebraska, Friday and Saturday, May 13 and 14, 1921. This meeting was held in joint session with the Nebraska Audubon Society, as was the nineteenth annual meeting on May 10 and 11, 1918, and, as at that meeting, the sessions were held at the First Unitarian Church, 31st and Harney Streets.

The business meeting was called to order at 6:00 p. m. by Dr. R. H. Wolcott, in the absence of the President, Dr. H. B. Lowry. The reports of the officers were received, and the financial report of the Secretary-Treasurer was referred to a committee composed of Mr. J. T. Zimmer and Mrs. G. A. Loveland for auditing.

The names of Mrs. Margaret M. Corey of Lincoln, Mr. F. M. Dille of Valentine, and Mr. C. K. Hart of Prosser, were proposed for membership, and all were elected.

It was moved and carried that nominations for new officers be made from the floor. As a result of the nominations made in that way the following officers were elected for 1921:

President—Dr. H. Hapeman, Minden.

Vice-President—Mrs. H. C. Johnston, Superior.

Secretary-Treasurer—Prof. M. H. Swenk, Lincoln.

A motion was carried authorizing the Secretary-Treasurer to donate $30.00 of the funds of the Union toward the financial support of the Wilson Bulletin during the current year, with the understanding that additional Nebraska material would be published by the Bulletin as offered.

Eleven members were present at this session of the N. O. U., as follows: Mesdames W. F. Baxter, L. R. Button, Blanche Garten, H. C. Johnston, G. A. Loveland, L. H. McKillip and Mary St. Martin and Messrs. L. O. Horsky, M. H. Swenk, R. H. Wolcott and J. T. Zimmer.

Adjournment of the business session took place at 6:30 p. m., shortly after which the members of the N. O. U. and Nebraska Audubon Society gathered in the Assembly Room of the church for the joint banquet. About one hundred members of the two societies were present at the banquet, along with several guests of the two societies from the neighboring state of Iowa.

Following the banquet Mr. Fitz Roberts, President of the Nebraska Audubon Society, introduced Dr. H. Gifford of Omaha, who spoke on "Some Random Observations of a Bird Chaser" giving especially his recent experiences on a trip to British Guiana. Prof. M. H. Swenk then announced the plans for the field day and introduced Dr. R. H. Wolcott of Lincoln, who spoke briefly on the

"History of Bird-Study Organizations in Nebraska." At the conclusion of Dr. Wolcott's remarks the two societies adjourned, at 9:30 p. m.

On Saturday, May 14, the nineteenth annual field day of the N. O. U. was held in conjunction with the members of the Nebraska Audubon Society. There were two principal field parties, the first entering the Fontenelle Forest along the Missouri River, south of Omaha, at 7:00 a. m., and the second an hour later. About seventy-five persons participated in the field day, the various parties meeting at noon for a picnic lunch, the out-of-town people as the guests of the Nebraska Audubon Society. The total list of the day included eighty-seven birds, as follows:

Bluebird, Robin, Olive-backed Thrush, Gray-cheeked Thrush, Wood Thrush, Blue-gray Gnatcatcher, Ruby-crowned Kinglet, Long-tailed Chickadee, White-breasted Nuthatch, Brown Creeper, Long-billed Marsh Wren, Short-billed Marsh Wren, Western House Wren, Brown Thrasher, Catbird, Redstart, Yellow-breasted Chat, Maryland Yellow-throat, Kentucky Warbler, Louisiana Water-Thrush, Grinnell Water-Thrush, Oven-bird, Cerulean Warbler, Myrtle Warbler, Yellow Warbler, Tennessee Warbler, Orange-crowned Warbler, Black and White Warbler, White-eyed Vireo, Yellow-throated Vireo, Warbling Vireo, Red-eyed Vireo, Bank Swallow, Tree Swallow, Barn Swallow, Purple Martin, Scarlet Tanger, Dickcissel, Indigo Bunting, Rose-breasted Grosbeak, Cardinal, Towhee, Swamp Sparrow, Lincoln Sparrow, Song Sparrow, Field Sparrow, Clay-colored Sparrow, Chipping Sparrow, White-throated Sparrow, Harris Sparrow, Western Grasshopper Sparrow, Goldfinch, Bronzed Grackle, Baltimore Oriole, Orchard Oriole, Western Meadowlark, Red-winged Blackbird, Cowbird, Crow, Blue Jay, Least Flycatcher, Traill Flycatcher, Wood Pewee, Phœbe, Crested Flycatcher, Kingbird, Ruby-throated Hummingbird, Chimney Swift, Yellow-shafted Flicker, Red-headed Woodpecker, Yellow-bellied Sapsucker, Northern Downy Woodpecker, Hairy Woodpecker, Belted Kingfisher, Yellow-billed Cuckoo, Broad-winged Hawk, Turkey Vulture, Western Mourning Dove, Spotted Sandpiper, Greater Yellow-legs, Sora, King Rail, Black-crowned Night Heron, Green Heron, Great Blue Heron, Blue-winged Teal and Black Tern.

Compared with the list made in exactly the same locality almost exactly three years previously, we find that twenty-one birds, namely the Brown Creeper, Long-billed and Short-billed Marsh Wrens, Kentucky Warbler, Bank Swallow, Purple Martin, Swamp and Western Grasshopper Sparrows, Least Flycatcher, Wood Pewee, Hairy Woodpecker, Yellow-bellied Sapsucker, Chimney Swift, Turkey Vulture, Spotted Sandpiper, Greater Yellow-legs, Sora, King Rail, Green Heron, Black-crowned Night Heron and Black Tern, were noted in 1921, but not in 1918; but that in 1921 fourteen birds, namely the Carolina Wren, Black-poll, Palm, Golden-winged

and Prothonotary Warblers, Bell Vireo, Rough-winged Swallow, Summer Tanager, Lark Sparrow, Rusty Blackbird, Acadian Flycatcher, Arkansas Kingbird, Sparrow Hawk and Killdeer, were not noted though seen in 1918.

The Blue-gray Gnatcatcher was found just beginning construction of a nest. At the N. O. U. field day last year a pair with a completed nest was found.

REPORT OF THE TREASURER, 1920-21

RECEIPTS

Cash on hand, May 9, 1919	$ 43.59
Annual dues collected	102.00
Interest on investment	10.87
	$156.46

EXPENDITURES

Wilson Bulletin	$ 58.50
Postage	4.00
Balance on hand, May 13, 1921	93.96
	$156.46

PUBLICATIONS REVIEWED

BIRDS OF SWOPE PARK, IN THE HEART OF AMERICA

The latest bird book for the middle west has just been issued by the McIndoo Publishing Company of Kansas City. It is entitled "Birds of Swope Park, in the Heart of America,"[1] and has been written by Mr. A. E. Shirling. For some time Kansas City has been developing a group of active bird students, including Mr. Ralph Hoffman, now of California, and Mr. Harry Harris. This little booklet on the birds of Swope Park now places its author among the "upper-classmen" of the middle west.

Swope Park, which lies within the city limits of Kansas City, Missouri, is a tract of 1332 acres in the valley of the Blue River, and it includes all the variety of topography and vegetation which is found in the Missouri River valley. It is reported to be an ideal haunt for seventy-eight species of nesting birds; and this number includes some not known in the Sioux City region, such as the Tufted Titmouse, Northern Parula Warbler, Worm-eating Warbler, Blue-winged Warbler, Prothonotary Warbler, Summer Tanager, etc. A Blue Grosbeak nested just outside the bounds of the park in 1918, making a total of seventy-nine for the park and vicinity.

The author's method was to divide the park into seventeen smaller areas, arbitrarily bounded. He made an early morning

[1] Birds of Swope Park in the Heart of America, Kansas City, Missouri. By A. E. Shirling, M.A. 1920. McIndoo Publishing Company, Kansas City, Mo.

survey of each of these areas during the breeding season (June), and counted the male birds by their song. The total of this census gave 2030 birds assumed to be nesting males. Assuming that each of these birds was mated there were, then, 4060 breeding birds in the park, or a trifle better than three to the acre.

The book also contains an annotated list of all the birds known to occur within the park, including migrants and winter birds; and 173 birds are thus listed.

The author gives a chapter on the "morning awakening" song of the birds, which makes an interesting contribution to this subject. He also proposes to make it a finable offense to permit the English Sparrow to nest on one's premises. An exceptionally good map of Swope Park is attached to the inside of the cover, and will be of great value to local students, as well as of interest to the general reader.

By way of adverse criticism attention might be called to the very many typographical errors in the scientific nomenclature, and to one or two cases of transposition of the halftone legends. Two or three arithmetical errors also occur on page 67.

On the other hand the little book is excellently conceived and will help many a beginner in bird-lore, while being read also, with enjoyment, by the experienced student. The text is presented in a literary style which deserves notice, and which reveals the fact that the author is thoroughly in love with the woods and wild life. The most enjoyable writers on birds are usually those whose interest and sympathy are not confined to that one aspect of nature. The fund of information presented is based upon much labor, and will make the task easy for those who wish to study birds in the area treated. T. C. S.

List of North Dakota Birds Found in the Big Coulee, Turtle Mountain and Devil's Lake Region

There appeared in 1917 a "List of North Dakota Birds"[1] by Elmer T. Judd. This list contains two hundred and fifty-five species, which have been observed by the author in th northern part of that state, particularly in the region of Devil's Lake and the Turtle Mountains. The work upon which this list is based was done between the years 1890 and 1896. So far as the reviewer is aware this list has been distributed only privately. It appears to have been very carefully prepared, and is no doubt the most authentic list yet published for the region covered. T. C. S.

[1] List of North Dakota Birds Found in the Big Coulee, Turtle Mountains and Devil's Lake Region. Published 1917 by the author, Elmer T. Judd, Cando, N. D.

THE WILSON BULLETIN

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OLD SERIES VOL. XXXIII. NEW SERIES VOL. XXVIII

THE ROADSIDE CENSUS

BY MARGARET M. NICE AND L. B. NICE

NORMAN, OKLAHOMA

Our discovery of the Roadside Census as an aid in bird study came by accident. On May 30, 1920, we started to play with our small daughter a new kind of "Roadside Euchre" by counting the Dickcissels that were lustily singing "jig-jig-jig" along each side of a five mile stretch of road. After a second Dickcissel game that same day — we found they averaged from six to eight a mile — the little girl suggested we count *all* the birds we saw on the rest of the trip, a distance of fifty miles. At first thought this seemed an impossible task for one hurrying along in an automobile, but, nevertheless, we tried it, and found it so worthwhile that by the middle of July we had taken 780 miles of Roadside Censuses.

A Roadside Census is a record of the number of birds of each kind seen along a particular road, on a particular date, between particular hours; that is, to be complete, it should tell the time, location and distance covered besides the temperature and state of the weather. Such a census has a definite, though limited, value: first, it has a distinct use in recording the abundance and distribution of certain birds; and second, it is valuable for comparative purposes, for revealing effects of different conditions of time, place and weather. Two things, however, it does not do: it does not give by any means a complete list of the birds of any region, and it does not enable one to say positively that such and such birds do not live in a certain district.

although under favorable conditions one could be practically sure in the case of some birds.

Our method of taking a Roadside Census is as follows: we have a small notebook with a pencil attached by a string, in this at the top of a page we write the date, hour, number of miles, county, place of starting and destination, and also a note as to weather. The temperature we have obtained later by writing to the local stations of the Weather Bureau. We always began a new census with a new county although sometimes it was difficult to know the county boundaries; often it was necessary to calculate from the map the number of miles from a certain town to the border of the county and turn over a page when the speedometer showed that we had reached that spot. As to the birds, we jot them down as they appear, using approximately the order of the A. O. U. Checklist, so as to know where to expect the name of each bird, an important matter when one sees several different species at a time. The numbers seen are put down after each bird's name and of course changed when occasion arises. There are usually a number of birds that have to go down under the caption "unknown"; with us the difficulty generally lay in being sure whether a few individuals were English Sparrows, Dickcissels or Grasshopper Sparrows. (In making up the totals for this paper we divided these "unknowns" between the three species in the same proportion as the "known" birds; other "unknowns" were left as such.) Naturally the person who drives the car cannot take a Roadside Census although he can often see birds on his side that the census taker misses. We find it important to copy our censuses in a permanent notebook each evening when the experience of taking them is fresh in our minds, for they are naturally difficult to read. That is one reason why it is better not to take too long a census at one time, but to start again after twenty or thirty miles because it is often hard to be sure of figures when so many have been written one after another when jolting along.

On our censuses we probably seldom saw more than a third of the breeding birds of a region; occasionally the

proportion was higher, but usually it was lower. There are certain birds that one can be sure of seeing if they are in the vicinity; they are conspicuous, fearless and nest near the roadside. For the prairies of Oklahoma, these dependable birds are Dickcissels, Mockingbirds, Mourning Doves, Meadowlarks, Lark Sparrows, Bluebirds, Kingbirds and Purple Martins. Other birds that are uncommon, shy, or prefer a different environment are only occasionally seen; such as Hawks, Crows, Cardinals, Painted Buntings, Yellow-breasted Chats, etc.

The following table gives the numbers of birds that were alike and different on three trips that were repeated a week later at different times of the day.

TABLE I.

Numbers of Species Alike when Trip was Repeated

Date	Distance	Time	Number Alike	Number Different	Per cent Alike
June 9	35 miles	11-2 P. M.	13	9	60
June 16	35 miles	4-6 P. M.	13	4	76.5
June 9	38 miles	2-5 P. M.	14	4	77.7
June 16	38 miles	12-4 P. M.	14	8	63.3
June 9	14 miles	5-6 P. M.	10	3	78
June 16	14 miles	10-11 A. M.	10	2	83.3

It will be seen that from 60 to 83 per cent of the species were alike when the same ground was covered a second time. The highest proportion was on the shortest trip where there was least chance for variety.

The forty-one censuses which form the basis of this study were all taken in Oklahoma in the summer of 1920. The country covered was of two very diferent types; most of it was level prairie, but some, especially in the eastern part of the State, was wooded and mountainous. The first two censuses were taken on a trip from Oklahoma City, which is in the center of the State, to Kingfisher county, fifty miles northwest. All the others occurred on two camping trips with Norman, twenty miles south of Oklahoma City, as a starting point. The first trip was to the Wichita Mountains, about 120 miles to the southwest. On the second trip we went directly south 60 miles to the Arbuckle Mountains, then east to the Ouachita Mountains;

northeast to Fort Smith, Arkansas; northwest to Cherokee county and from there back to Norman.

The first two censuses occurred May 30th, the others were taken from June 9th to 16th and from June 26th to July 15th. We saw, therefore, only summer birds, and, for the most part, breeding birds. In the beginning the males were much in evidence singing; a little later there was less singing but females as well as males were seen with food for the young; and by July many young were with the parents, especially Horned Larks and Mourning Doves. A few birds had begun to gather in flocks by the middle of July, as Cowbirds, Red-winged Blackbirds and Cliff Swallows; but none of these flocks were large, forty-two birds being the greatest number seen together.

Our primary object was to obtain data on the distribution and comparative abundance of birds in the State, but upon tabulating our results we found other relationships that were of interest, especially the effects of weather and of the character of the country.

The total number of native birds seen during 780 miles of Roadside Censuses was 3755, which gives an average of 4.8 birds to a mile. (In all the tables and calculations, English Sparrows are omitted entirely; they will be treated separately.)

The effects of weather, time of day, and to a small extent, the time of year, are shown in Table II.

TABLE II.

Numbers of Native Birds Seen
Showing Effect of Weather, Time of Day and Time of Year

Number of Censuses	Total Miles	Weather	Time	Average Number of Birds Seen per Mile
41	780	Mostly Pleasant	All Times	4.8
39	696	Pleasant	All Times	5.2
2	84	Rainy	All Day	1.4
26	395	Pleasant	Early Morning or Late Afternoon	6.2
13	301	Pleasant	At or Near Noon	3.9
2	50	Pleasant	May 30	10.2
11	228	Pleasant	June 9 - 16	3.5
11	196	Pleasant	July 12 - 15	6.7

Two aspects of the weather affected the numbers of birds to be seen: first, the noon heat, and second, rain. All the censuses but two were taken on days whose maximum temperature ranged from 90° F to 95° F. The exceptions were one cooler day — May 30th, when the maximum was 88° F. and one hotter day — July 3rd, when the thermometer reached 99° F. All but two of the censuses were taken on sunny days. Thus there were remarkably uniform weather conditions on thirteen of the sixteen days on which censuses were taken. The thirteen counts at or near noon occurred when the weather was undeniably hot and the inactivity of the birds is marked, for only an average of 3.9 birds per mile was seen in contrast to the 6.2 birds per mile noted in the cooler parts of the day. The effect of an all day rain, even though the temperature rose to 91° F., is even more striking in driving the birds to cover than the noon heat on sunny days, for only 1.4 birds were seen per mile instead of the 5.2 observed in pleasant weather.

We have very little data on the difference in the number of birds to be seen at different times of the year, as there are only 47 days between our first and last census. Our results stand as follows: 50 miles of censuses on May 30th gave us an average of 10.2 birds a mile; 228 miles from June 9th to 16th gave 3.5 birds a mile and 196 miles from July 12th to 15th gave 6.7 birds a mile. The distance travelled in May is so short that it is hardly comparable to the other two sets of figures. As for the June and July results, they represent the same number of censuses— eleven —, much the same number of miles, equally pleasant weather with practically the same distance travelled near noon — 73 and 76 miles, respectively, — and both were taken entirely in prairie country. Therefore they would seem as comparable as one could wish with one exception; they were taken in different parts of the State, the June censuses in the southwest, in Cleveland, Grady and Comanche counties; while the July censuses taken in the east, in Leflore, Sequoyah, Muskogee, Wagoner, Creek, Okmul-

gee and Tulsa counties. The main difference between these regions is one of humidity, the eastern counties having an annual rainfall of 35 to 40 inches and the southwestern about 30. Probably the bird life is more abundant at all times in the more luxuriant vegetation of the east than the west. So our July figures doubtless represent the effects of two causes of abundance — more favorable environment than the region visited in June as well as the actually greater number of birds to be seen in July. Although we cannot rely on the proportions as they stand, it is undoubtedly true that more birds are to be seen on a Roadside Census when the males are in full song and after the young are raised than while the young are in the nest.

The greatest number of birds seen per mile was 18 and the least 1.6 with the exception of the rainy day. The former record occurred on July 15th and was swelled by great numbers of young Mourning Doves and Horned Larks. The very small number of the other census must have been due to the unusual heat for it was taken at noon on the day when the temperature reached 99° F. The four largest and smallest censuses taken in pleasant weather are shown in Table III.

TABLE III.

The Largest and Smallest Censuses Taken in Pleasant Weather

Date	Time of Day	Distance	Place	Average Number of birds Seen per Mile
July 15	6 - 7 P. M.	11 miles	Prairie, Tulsa Co.	18
May 30	4 - 5 P. M.	10 miles	Prairie, Kingfisher Co.	13
June 9	11 - 2 P. M.	35 miles	Prairie, Grady Co.	2
July 3	12 - 2 P. M.	10 miles	Woods, Pushmataha Co.	1.6

We saw 72 different species in the 41 censuses. The average number of species seen in an average run of 20 miles was 17, while the shorter trips, averaging 7 miles, gave us 12. The effect of weather and character of country on the number of species seen is shown in Table IV.

TABLE IV.

Numbers of Different Species Seen

Showing Effects of Weather, Character of Country and Length of Trip

Number of Censuses	Character	Average Number of Miles	Average Number of Species Seen on Each Census
39	Pleasant Weather	17.8	16.6
2	Rainy Weather	42	14.5
33	Prairie	27	16
5	Woods	17	22
33	10–40 Miles	20	17
6	4–9 Miles	7	12

These figures are not directly comparable as in Tables II and III, for the average length of the different censuses varies so much. However, the depressing effect of the rain is almost as evident in the lessened numbers of species seen as in the total numbers. The greater variety of birds in a mixed environment over those on the prairie alone is evident from the 22 kinds observed on the average trip of 17 miles in woods, in comparison to the 16 seen on the average trip of 27 miles on the prairies; most of the "woods" censuses included some prairie. In this table the noon census of July 3rd is omitted because of its unusual heat; if it is included, the number of species seen in woods would be 19 on a trip of 16 miles.

The greatest number of different kinds of birds seen on any one trip was 31 and the least 4. Both of these were short trips, entirely through woods; the first was through more varied country than the second, but most of the blame for the minimum number can probably be laid to the excessive heat at that time.

TABLE V.

Largest and Smallest Number of Species

Seen on Trips of 10 Miles and Over

Date	Time of Day	Distance	Place	Average No. Species seen each Census
June 30	9 - 12 M.	12 Miles	Woods; Arbuckle Mts.	31
June 29	12 - 3 P. M.	12 Miles	Woods; Platt Nat. Park	25
June 26	11 - 12 M.	16 Miles	Prairie; Garvin Co.	9
July 3	12 - 2.P. M.	10 Miles	Woods; Pushmataha Co.	4

As to the main object of our study, the kinds of birds, their distribution and comparative abundance, Table VI gives some data in regard to the most common birds arranged in order of breadth of distribution.

TABLE VI.

The Fourteen Most Common Birds in 41 Roadside Censuses

	No. of Censuses in which each occurred	Total Number Seen	Av. No. Seen on each census where each occurred	No. Censuses in which each bird came 1st	No. Censuses in which each bird came 2nd
Western Mourning Dove	39	478	12.2	7	10
Mockingbird*	39	275	7	5	6
Dickcissel	33	687	20.8	17	4
Bluebird	31	202	6.5	6	3
Lark Sparrow *	29	166	5.4	2	2
Bob-white	29	71	2.4	0	1
Kingbird	27	102	3.8	0	0
Meadowlark*	24	213	9	0	2
Read-headed Woodpecker	23	90	4	0	2
Orchard Oriole	21	64	3	0	0
Horned Lark*	20	168	8.4	1	1
Scissor-tailed Flycatcher	20	124	6.2	0	1
Purple Martin	15	91	6	0	0
Cliff Swallow	5	99	20	2	0

It will be seen that the Mourning Dove and Mockingbird were found on practically every single census. The former were missing on two trips, the first at noon in McClain County where they were seen a week later on repeating the trip and the second on the noon census of July 3rd which has made so many exceptions. Mockingbirds were recorded on all but two censuses; one in the Wichita Mountains and the other in the Arbuckles. These two are the most adaptable of all our native birds here; Mockingbirds are found about farmhouses on the prairies and cabins in the woods, while the Mourning Dove is even more universal in its tastes for it will live in deep woods,

* In central and western Oklahoma the Mockingbirds and Lark Sparrows were the western forms but near the Arkansas border the birds were probably the eastern forms, according to information kindly given me by Dr. H. C. Oberholser. The Horned Larks were "Desert" in central Oklahoma but may have been "Prairie" in the east. The Meadowlarks were all eastern except those in Kingfisher County on the second census which were western.

in open country with few trees, or if there are no trees at all, nests upon the ground. The main variations in the distribution of the other birds depended on the distinction in environments — the prairie and the woods. The prairies are the homes of the Dickcissels, Lark Sparrows, Meadowlarks and Horned Larks; Scissor-tailed Flycatchers, Kingbirds and Orchard Orioles like the prairie with orchards, but Red-headed Woodpeckers and Bluebirds were most abundant in woods, especially where there are many girdled trees. Purple Martins depend, of course, on bird houses and as nearly every dwelling in southeastern Oklahoma has its Martin box, these birds were common there both in the woods and on the prairies. Cliff Swallows were seen on only five censuses; they were all in flocks in the northeastern prairie districts.

In order of total abundance on all 41 censuses, the birds range as follows: Dickcissels, 687; Mourning Doves, 478; Mockingbirds, 275; Meadowlarks, 213; Bluebirds, 202; Horned Larks, 168; Lark Sparrows, 166; Scissor-tailed Flycatchers, 124; Kingbirds, 102; Cliff Swallows, 99; Purple Martins, 91; Red-headed Woodpeckers, 90; Bob-whites, 71; and Orchard Orioles, 64.

Some birds had a wide distribution yet were nowhere abundant; the Bob-white was the best instance of this, as it was seen on 29 trips but only reached a total of 71. Others in this same class were Kingbirds, Red-headed Woodpeckers and Orchard Orioles. Another class were limited to a somewhat restricted range but were usually abundant where they did occur, as Horned Larks, Meadowlarks and especially Dickcissels. Only two species were almost universally distributed and at the same time abundant — the Mockingbird and Mourning Dove.

As to English Sparrows, they were, unfortunately, the most common bird of all, since we saw 1486 of them — two and a half times as many as the most abundant native bird, the Dickcissel. They constituted 28 per cent of all the birds seen. They were recorded on 33 censuses, some of the trips taken in woods and those on the Wichita Game Reserve being almost the only ones free from them. They

were the most abundant bird in 16 censuses and second most abundant in 4. They varied from none at all to 350 on one census. This great number was seen July 13th, in Muskogee County, where they apparently had repaired with all their broods to feast upon the wheat fields.

Taking a Roadside Census is a fascinating occupation and lends fresh interest to an oft-repeated or otherwise monotonous journey. Yet to do it well requires considerable field experience and a fund of persistance, for it must be done thoroughly to be of any value. These studies were made at only one season and over part of one State. It would be interesting to try this method at other times of the year, when results would necessarily be much less uniform than in the summer, and especially in other parts of the country. Much information also as to the increase and decrease of roadside birds could be gathered by repeating such censuses in later years.

In conclusion let us give two sample censuses; one over prairie in central Oklahoma and the other through woods in southeastern Oklahoma.

PRAIRIE	WOODS
Kingfisher and Oklahoma Counties. Barrows to Oklahoma City. 40 miles.*	Atoka County. From Atoka to Darwin. 23 miles. Through Woods.
May 30, 1920. 5:00–7:00 p. m.	July 3, 1920. 8:30–12:00 M.
Day's Temp. 60° – 88°. Sunny	Day's Temp. 76° – 99°. Sunny.
1 Killdeer	2 Bob-whites
68 Western Mourning Doves	8 Western Mourning Doves
2 Yellow-billed Cuckoos	7 Turkey Vultures
11 Howell Nighthawks	1 Hawk (sp?)
28 Scissor-tailed Flycatchers	1 Hairy Woodpecker
13 Kingbirds	4 Pileated Woodpeckers
2 Arkansas Kingbirds	25 Red-headed Woodpeckers
1 Crow	3 Kingbirds
3 Cowbirds	1 Crested Flycatcher
30 Meadowlarks (neglecta & magna)	1 Wood Pewee
16 Orchard Orioles	1 Orchard Oriole
1 Baltimore Oriole	5 English Sparrows
5 Bronzed Grackles	3 Western Lark Sparrows
40 English Sparrows	1 Chipping Sparrow
	1 Field Sparrow

* On May 20, 1921, from 5:00-7:30 p. m. (temperature 67-88) we repeated this trip, seeing 20 species (4 of them different from the year before) and 453 birds in all.

PRAIRIE

3 Western Grasshopper Sparrows
26 Western Lark Sparrows
2 Western Blue Grosbeaks
137 Dickcissels
6 Western Mockingbirds
1 Brown Thrasher
20 Unknown

20 species; 416 in all.

WOODS

3 Cardinals
2 Summer Tanagers
10 Purple Martins
1 Red-eyed Vireo
28 Western Mockingbirds
1 Carolina Wren
1 Tufted Titmouse
1 Plumbeous Chicadee
24 Bluebirds

24 species; 135 in all.

AN ANNOTATED LIST OF THE LAND BIRDS OF SAC COUNTY, IOWA

BY J. A. SPURRELL, OF WALL LAKE, IOWA

PART II

This paper concludes a local list of the land birds of Sac county, the first part of which appeared in the Wilson Bulletin, Vol. XXXI, No. 4 (December, 1919).

Harris Sparrow (*Zonotrichia querula*).

The Harris sparrow is a regular and abundant migrant both spring and fall. Since its migration range is so restricted, I give all the migration data I have obtained, in the table below:

SPRING MIGRATION

Year	When first seen	About No. 1st seen	Next seen	Became Common	Last seen	Remarks
1909	3-29	1	4-4	5-8	5-17	
1910	5-1	4	5-6	5-12	5-24	
1911	4-2	1	4-6	5 8	5-13	They were common at an earlier date, which I failed to record.
1912	5-3	3	5-4		5-20	I failed to record the missing date.
1913	5-1	3	5-2	5-8	5-22	
1914	3-29	3			5-24	I failed to record the missing dates.
1915	5-2	4	5-7			I failed to record the missing dates.

FALL MIGRATION

1908	9-23	5	9-27	10-4	11-8	Last one seen could not fly, as it had a broken wing.
1909	9-25	10	9-29	10-4	10 31	
1910	10-1	20	10-2	10-8	11-4	
1911	10-1	20	10-3	10-7		Field to record last date.
1912	9-16	10		10-12	11-10	First seen by Mrs. E. B. Hayden.
1913	10-2					Failed to secure other dates.

Although the dates of arrival vary widely, the dates of departure vary but little.

In the fall the dates of both arrival and departure are fairly close year after year.

The Harris Sparrow frequents groves, thickets, and hedges of willow trees, delighting in brushy places with plenty of cover. It spends much of its time scratching on the ground. In the spring it often perches in the trees from ten to fifteen feet above the ground to utter its peculiar song, usually singing in the evening.

White-crowned Sparrow (*Zonotrichia leucophrys leucophrys*).

A tolerably common migrant frequenting groves and brushy places. My first seen dates cover the period from April 26 to May 10. Mrs. E. B. Hayden reported one seen on July 10, 1913.

Intermediate or Gambel's Sparrow (*Zonotrichia leucophrys gambeli*).

Noted only once, May 1, 1912. On this day I was watching a sparrow which I took to be a white-crowned sparrow, through the eight-power binoculars at close range, but I soon saw that it was not, as the white crown was not large enough, there was no black line in front of the eye, and the lores were wholly white. Its song was similar to the white-throat's song. The bird stayed about the grove all day.

White-throated Sparrow (*Zonotrichia albicollis*).

This species is the most abundant of all the native sparrows in both spring and fall migrations. It is abundant in every grove and hedge, and even in the tall weeds along the fences. First seen dates in spring are from April 18 to May 3. It has a habit of frequenting pine or spruce trees to roost and the first sign of its arrival is usually its sharp call note, frequently repeated just before it goes to roost at dusk.

Tree Sparrow (*Spizella monticola monticola*).

An abundant migrant and winter resident. In very severe winters of abundant snowfall it is usually scarce or absent during the months of January and February. I have seen it first in the fall from October 24 to November 6. In the spring, last seen dates vary from March 20 to May 6.

Chipping Sparrow (*Spizella passerina passerina*).

This sparrow is a common migrant and a rare breeder. First seen dates are from April 16 to May 11. At two different times in the town of Wall Lake I have seen the young only recently from the nest and still being fed by the parents.

Clay-colored Sparrow (*Spizella pallida*).

A common but rather inconspicuous migrant. I have not noted it in the fall. In the spring it frequents groves and shrubbery First seen dates are from May 2 to 13.

Field Sparrow (*Spizella pusilla pusilla*).

Mrs. George May reported this species as common in the willows along the Boyer river in the spring of 1912.

Slate-colored Junco (*Junco hyemalis hyemalis*).

A very abundant spring and fall migrant. First seen dates in spring vary from March 3 to March 20, with the exception of one seen only on the day of January 6, 1913. Last seen dates in the spring are from April 9 to 23. In the fall first seen dates are from September 29 to October 8; last seen dates from November 5 to 17. Mr. Joe Abernathy reported that juncos are to be found in the timber at Sac City until February 1.

Montana Junco (*Junco montanus*).

I identified one individual of this species October 17, 1915. Following is the record entered in my notebook at the time: "I saw one through the kitchen window while it was sitting only four feet away in the boxelder tree. I saw the pink sides very distinctly and its back was more grayish than the ordinary junco's is."

Song Sparrow (*Melospiza melodia melodia*).

A common migrant. First seen dates in spring range from March 29 to April 25.

Lincoln Sparrow (*Melospiza lincolni lincolni*).

Another common but very inconspicuous migrant. First seen dates vary from May 3 to 10. I have usually seen it creeping about in the grass under or near trees or shrubbery.

Swamp Sparrow (*Melospiza georgiana*).

A common migrant and breeder. I have seen it only in marshes where there is standing water, or a very tall dense growth of slough grass. April 18 is my earliest first seen date. During the nesting season its clear song is a very pleasing feature of the marshes it frequents.

Fox Sparrow (*Passerella iliaca iliaca*).

A tolerably common spring and fall migrant. First seen dates in spring are from March 15 to April 11.

Towhee (*Pipilo erythrophthalmus erythropthalmus*).

A rare and rather irregular migrant at Wall Lake. My first dates are from March 21 to April 27. I have found the species in the woods at Sac City throughout the summer. Mr. Joe Abernathy reports it as common and nesting at Sac City.

Cardinal (*Cardinalis cardinalis cardinalis*).

I have never seen this species at Wall Lake, but Mr. C. Orville Lee and Joe Abernathy both reported it at Sac City. The latter stated that a pair spent the winter of 1913-1914 in Sac City and nested there the following summer. They can only be called rare residents of recent arrival.

Rose-breasted Grosbeak (*Zamelodia ludoviciana*).

A common migrant and nesting species. My first seen dates are from May 1 to 20. Nearly every farm grove has its pair of grosbeaks, and they are also common in the trees of the towns.

Indigo Bunting (*Passerina cyanea*).

A rare breeder and migrant. A pair once nested in the town of Wall Lake. I have found them tolerably common in June and July along the Raccoon river at Sac City. Mr. Joe Abernathy also reported seeing four pairs there.

Dickcissel (*Spiza americana*).

An abundant migrant and breeder. First seen dates vary from May 3 to 27. It usually nests in the hayfields, although somestimes nesting in the tall grass of pastures or along fence rows. I have found only one nest placed directly on the ground and that was on top of a "bog" in a wet pasture. Usually the nests are placed a few inches up among the grass or weed stems. The nests are frequently destroyed by the early cutting of clover fields. I have found many of the eggs while loading hay.

Lark Bunting (*Calamospiza melanocorys*).

I first identified this species May 19, 1908, when I saw three males in a flock with some cowbirds. They were about the size of bobolinks and had the white wing patches characteristic of lark buntings with all the rest of the plumage black. I did not see it again until May 9, 1914, when I saw one male and heard it sing. On the 22d I again saw one male; either the same or another, I am not sure which.

Scarlet Tanager (*Piranga erythromelas*).

The scarlet tanager is a rare migrant at Wall Lake. I have seen it only three times: May 22, 1905, June 9, 1907, and May 18, 1909. Mr. Lee reports it as a rare nesting species at Sac City. Mr. Joe Abernathy reported seeing four pairs there.

Purple Martin (*Progne subis subis*).

A common nesting species in the various towns of the country. Only in the fall, previous to migration, does it range any distance over the surrounding country. First seen dates in spring are from April 15 to 29.

Cliff Swallow (*Petrochelidon lunifrons lunifrons*).

An abundant migrant and formerly a common breeder. Although I think it still nests in some parts of the county, I do not know of any definite nesting records in recent years. First seen dates in spring are from April 29 to May 27. In the fall it is abundant, flying over low pastures along the streams in company with barn, bank, and tree swallows.

Barn Swallow (*Hirundo erythrogastra*).

A common migrant and breeder. Nearly every farmer's barn and most bridges have this swallow's nest in or underneath them.

Two broods are usually reared each summer. First seen dates are from April 15 to May 11.

Tree Swallow (*Iridoprocne bicolor*).

At times, a very abundant migrant, and a rare breeder. I have found only two nests, one of them in a bird box attached to a farm building, and the other in an old woodpecker hole in a fence post along a railroad track. First seen dates vary from April 18 to May 12. In the fall it is often to be found in enormous numbers about Wall lake and the "Goosepond."

Bank Swallow (*Riparia riparia*).

This species is common in some localities. The bank swallow nests in the high banks along the shores of Wall lake, and at several other places where there are steep banks or gravel pits in proximity to water. First seen dates vary from April 26 to May 15.

Rough-winged Swallow (*Stelgidopteryx serripennis*).

A common breeder along the Raccoon river, but I have never found it nesting elsewhere except that for a few years two pairs nested in holes in a cement bridge on my father's farm near Wall Lake. First seen dates are from April 28 to May 30.

Bohemian Waxwing (*Bombycilla garrula*).

Specimen in the Smith collection. A very rare or casual spring migrant. Before I started to keep notes, a flock of about fifteen visited the orchard in the spring. I can very distinctly remember the beautiful dull gray of their soft plumage. Following is my only note book entry: "May 27, 1909, I saw three Bohemian waxwings about 9 a. m.. They stayed in the tops of a couple of apple trees for a long time, eating apple blossom petals. At times they uttered a note which sounded like a shrill 'chee' to me."

Cedar Waxwing (*Bombycilla cedrorum*).

I have identified it only once, June 3, 1909, when I approached within ten feet of one which was catching small flying insects. It was much darker in plumage than the Bohemian waxwings I saw a few days before. Mrs. H. B. Smith reported cedar waxwings as common in the spring about a cedar hedge, upon the berries of which they fed.

Migrant Shrike (*Lanius ludovicianus migrans*).

A tolerably common breeder. It is not a winter resident except in rare instances. I have referred all the shrikes to this subspecies as it is the common form, although I have seen shrikes in which the rump was white or very light colored.

Red-eyed Vireo (*Vircosylva olivacea*).

Reported by Mrs. George May as common in the spring of 1912.

Warbling Vireo (*Vireosylva gilva gilva*).

Reported by Mrs. George May as very common in the spring of 1912. My sister, Rubby Spurrell, has first dates for this species from May 3 to 25. Mr. Joe Abernathy reported finding two nests north of Wall lake. I identified it May 15, 1915, largely by its song.

Blue-headed Vireo (*Lanivireo solitarius solitarius*).

Reported by Mrs. George May as rare. My sister has seen it on May 8, 1913, and May 15, 1914.

White-eyed Vireo (*Vireo griseus griseus*).

Reported by Mrs. George May as rare.

Black and White Warbler (*Mniotilta varia*).

A common and regular migrant in spring and fall. As it creeps about the tree trunks it is quite conspicuous as compared with many warblers. My first seen dates vary from May 2 to 15.

Blue-winged Warbler (*Vermivora pinus*).

Mrs. George May reported three seen in the spring of 1912.

Nashville Warbler (*Vermivora rubricapilla rubricapilla*).

I first identified this species from a dead specimen. It is a tolerably common migrant when present, but was not observed five years out of eight. First seen from May 14 to 22.

Orange-crowned Warbler (*Vermivora celata celata*).

A rare migrant. I first identified it May 23, 1915. It is difficult to be certain of a sight identification of this species, but I saw the "orange" on the head of this particular one several times.

Tennessee Warbler (*Vermivora peregrina*).

Mrs. George May reported several seen in 1912. I identified it May 16, 1915. It is a tolerably common migrant.

Northern Parula Warbler (*Compsothlypis americana usneae*).

This warbler is a rare migrant. I identified it May 13, 1913, when I obtained an excellent view of one out of a number, thru the field glasses. They were part of a "wave" of all kinds of warblers.

Cape May Warbler (*Dendroica tigrina*).

I first identified it positively May 4, 1915, although I have had glimpses of it in previous years. My sister has also observed it in years when I did not see it. It is a rare migrant.

Yellow Warbler (*Dendroica aestiva aestiva*).

An abundant migrant and common breeder. First seen dates vary from April 30 to May 12. It nests commonly in shrubbery and the nests often contain cowbird eggs. It has been my experience that the warbler always deserts its nest if the cowbird's egg is removed.

Myrtle Warbler (*Dendroica coronata*).

Ordinarily a common to abundant migrant, but in some years is almost rare. First seen dates are from April 15 to May 3.

Magnolia Warbler (*Dendroica magnolia*).

Ordinarily a common to abundant migrant, but it varies much in numbers from year to year, and was not noted three years out of eight. First seen dates vary from May 10 to 23.

Cerulean Warbler (*Dendroica cerulea*).

I have no recent records, but there is a specimen in the Smith collection that was taken locally.

Chestnut-sided Warbler (*Dendroica pensylvanica*).

A tolerably common migrant, but very irregular as to occurrence, being noted only three years out of eight. First seen dates are May 22, 1910; May 26, 1913; and May 24, 1915.

Bay-breasted Warbler (*Dendroica castanea*).

A rare migrant. I identified it May 18, 1909, and my sister saw one May 13, 1913.

Black-poll Warbler (*Dendroica striata*).

A common and fairly regular migrant, being observed six years out of nine years of observation. First seen dates range from May 10 to 21.

Blackburnian Warbler (*Dendroica fusca*).

A rare migrant. I identified it in life May 14, 1913, when I saw two males. A few years before this I examined a female specimen which a neighbor's cat had caught.

Sycamore Warbler (*Dendroica dominica albilora*).

Mrs. George May and her mother, Mrs. E. B. Hayden, saw one in Wall Lake May 13, 1913. This was during a great migration "wave" of warblers and other birds. Mr. Joe Abernathy reported one at Sac City.

Black-throated Green Warbler (*Dendroica virens*).

I first observed this species August 31, 1912, seeing an adult female which I observed closely from a short distance. In the spring I saw one May 12, 1913, and my sister saw the species May 15, 1911, and May 22, 1913. It is a rare migrant.

Palm Warbler (*Dendroica palmarum palmarum*).

A rare migrant. My first identification was May 3, 1911, when I saw two in Odebolt. I did not record it again until May 2, 1915.

Oven-bird (*Seiurus aurocapillus*).

A rare migrant. I first observed it May 26, 1910, and again May 12, 1914. My sister saw one May 11, 1914.

Water-Thrush or Grinnell's Water-Thrush (*Seiurus noveboracensis noveboracensis* and *noveboracensis notabilis*).

As it is impossible to distinguish between these subspecies without killing the bird, I include them both under one heading. A rare migrant. First identified May 15, 1913, and seen again May 10, 1914.

Louisiana Water-Thrush (*Sciurus motacilla*).

A rare migrant. I identified it on May 27, 1910, in the old railroad gravelpit south of Lake View.

Mourning Warbler (*Oporornis philadelphia*).

A rare migrant. I have seen three males, getting close enough to all of them to see the black throat patch which distinguishes it from the Connecticut warbler. Dates seen: May 4, 1911; May 26, 1913; May 23, 1915.

Maryland Yellow-throat (*Geothlypis trichas trichas*).

A common regular migrant and a rare breeder. I have found the nest built in slough grass in a wet slough. First seen dates range from May 6 to 19.

Yellow-breasted Chat (*Icteria virens virens*).

Mrs. E. B. Hayden reported seeing one at Sac City.

Wilson Warbler (*Wilsonia pusilla pusilla*).

A tolerably common and regular migrant. First seen dates vary from May 10 to 20.

Canada Warbler (*Wilsonia canadensis*).

A rare migrant. Seen by my sister on the following dates: May 20, 1912; May 26, 1913; May 23, 1914.

Redstart (*Setophaga ruticilla*).

A common and fairly regular migrant, being absent only two years out of nine. First seen dates are from May 12 to 22.

Pipit or Titlark (*Anthus rubescens*).

A rare and irregular migrant. I have always observed it on bare or plowed ground, and have never seen a flock of more than thirty. First seen dates are from May 10 to 15. I have also seen it in the fall.

Catbird (*Dumetella carolinensis*).

A common migrant and breeder. First seen dates covering twelve years vary from May 2 to 16.

Brown Thrasher (*Toxostoma rufum*).

A common migrant and a common nesting species. First seen dates vary from April 19 to May 5.

Western House Wren (*Troglodytes aedon parkmani*).

A common migrant and breeder, usually rearing two broods in a season, and nearly every farmstead has its pair of wrens. First seen dates range from April 9 and 25 to May 12. The April 9 date is an exceptionally early record.

Winter Wren (*Nannus hiemalis hiemalis*).

Only one record. I identified one October 18, 1908, in some willows along a small creek.

Short-billed Marsh Wren (*Cistothorus stellaris*).

A common migrant and also a common breeder in suitable sloughs. It will nest in sloughs where there is no standing water.

while the long-billed marsh wren will not, or at least, does not in this locality. It is very difficult to identify because of its habit of constantly bobbing back into the grass. After the first identification, it is easily told by its actions and song.

Prairie Marsh Wren (*Telmatodytes palustris iliacus*).

This subspecies of the long-billed marsh wren is a tolerably common summer resident about Wall lake and its inlet. I have no migration data for this and the preceding species because I live too far from their haunts.

Brown Creeper (*Certhia familiaris americana*).

A tolerably common migrant and a rare winter resident. It usually appears in November and departs in March or April.

White-breasted Nuthatch (*Sitta carolinensis carolinensis*).

A tolerably common winter resident and possibly a summer resident in the woods along the Raccoon river.

Red-breasted Nuthatch (*Sitta canadensis*).

A very rare migrant. One was seen by my sister May 8, 1911.

Black-capped Chickadee (*Penthestes atricapillus atricapillus*).

A common winter resident and a rare breeder in the vicinity of Wall Lake. I know of two different broods successfully reared in this vicinity. It is probably more common as a breeder in the woods.

Golden-crowned Kinglet (*Regulus satrapa satrapa*).

A rare spring and fall migrant. First seen dates in spring are: March 23 and April 19; in fall, November 11 and 17.

Ruby-crowned Kinglet (*Regulus calendula calendula*).

A common spring and fall migrant. First seen dates in spring are from April 10 to 27. I have frequently seen it flash its ruby crown in spring, and occasionally heard it sing, but never knew it to do either of these in the fall. Its song is surprisingly loud and clear for so small a bird.

Wood Thrush (*Hylocichla mustelina*).

A tolerably common migrant and breeder. It usually nests in orchard trees. First seen dates vary from May 6 to 11.

Gray-cheeked Thrush (*Hylocichla aliciae aliciae*).

A common or even abundant migrant the two or three days it is here in May. Also reported common by Mrs. George May.

Olive-backed Thrush (*Hylocichla ustulata swainsoni*).

A common to abundant migrant the two or three days it is here in May. It is found at the same time as the gray-cheeked thrush. Also reported common by Mrs. George May.

Robin (*Planesticus migratorius migratorius*).

An abundant migrant and breeder. In the year 1912 a few wintered. First seen dates cover the period from February 28 to March 29.

Bluebird (*Sialia sialis sialis*).

A rare migrant and breeder in the vicinity of Wall Lake. I have noted it oftener of late years than formerly. Along the Raccoon river it is much more common. First seen dates are from March 5 to April 26, with May 12 and 30 as extra late dates.

NOTES ON THE DISTRIBUTION AND MIGRATION OF NEBRASKA BIRDS

I. TYRANT FLYCATCHERS (*Tyrannidae*)

BY MYRON H. SWENK AND RALPH W. DAWSON

Scissor-tailed Flycatcher *Muscivora forficata* (Gmelin).

Although this striking bird is a common summer resident and breeder from southern Kansas southward, it has always been considered as of purely accidental occurrence in Nebraska. In fact, prior to the present year, there are but two known instances of its having been seen in the state. The first of these was in the fall of 1872, when L. Bruner observed a single specimen of this species south of Lincoln. The bird was very clearly seen, and, as the observer was familiar with the species, no doubt has ever attached to this record. (*Bruner, Some Notes on Nebraska Birds*, 1896, p. 114.)

The second record of this species for the state was made by Mr. Charles Armstrong in the spring of 1913. Mr. Armstrong was at the time a student in the Nebraska School of Agriculture, and during April of that year, while he was disking in the field on a farm near Greenwood, Nebraska, he saw and carefully observed one of these birds, which he had never before seen or even heard of. On returning to school he gave a very accurate description of the bird to R. W. Dawson, including the scissor-like tail and scarlet sides, and when shown the plate of this species which appeared in Bird-Lore, ix, No. 6, he at once recognized it as representing the bird he had seen. This second record, heretofore unpublished, has likewise been fully accepted by Nebraska ornithologists. However, in both the above cases the birds noted were apparently stragglers.

On May 30, 1921, while Dr. D. C. Hilton of Lincoln, was waiting outside the main entrance gate to Capital Beach he noted a Scissor-tailed Flycatcher, from the plumage evidently a female, and discovered it had a nest in the last tree of a row of small elms bordering the driveway after passing through the entrance gate. He observed the bird long and carefully, and later on in the same day both Dr. Hilton and M. H. Swenk visited the place again, this time flushing the flycatcher from her nest, which was

located about fifteen feet up in the elm tree, and observing her snapping her insect prey from the air.

Word of the find was discreetly passed around, and the bird was noted during the week by R. W. Dawson, R. H. Wolcott, H. B. Lowry and other ornithologists of Lincoln. Only the female was observed, which remained in the vicinity of the nest when not on it, and found diversion in chasing English sparrows away and quarreling in a good natured way with a Western Kingbird. On June 7, R. W. Dawson noted that the bird was paying but little attention to her nest, though remaining in the general vicinity. On June 12 he noted that she had begun the construction of a new nest, in an elm tree in the same row, the seventh tree to the north from the one in which the original nest was located. The original nest had at this time been occupied by English sparrows. The new nest was barely started on June 12. By July 3 the new nest had been completed and it, too, was occupied by English sparrows, while nothing was to be seen of the Scissor-tailed Flycatcher, nor has the bird been observed by anyone since.

The writers are indebted to Dr. D. C. Hilton for the privilege of placing his remarkable find on record, for this establishes the species as a breeder, occasionally at least, some hundreds of miles to the northeast of its previously recorded breeding range.

Kingbird *Tyrannus tyrannus* (Linnaeus).

The Kingbird is an abundant summer resident and breeder over the entire state, and in every locality where there are any trees whatever to furnish it with nesting sites. It was first recorded from Nebraska by Thomas Say, who noted its arrival at Engineer Cantonment on May 7, 1820. Maxmilian also noted it along the Burt County bank of the Missouri River on May 6, 1833. In 1877 Aughey stated that it was abundant west to the middle of the state, but from thence on to the western line of Nebraska occurred but sparingly. By 1900, however, the Kingbird was almost if not quite as common in suitable places in western Nebraska as it was farther east, except possibly along the more heavily wooded eastern Nebraska streams

In eastern Nebraska it arrives in late April or early May, nests during late May and June, and departs in late August and September. At Lincoln it has been noted as early as April 25, and is usually common after April 29. It frequently remains until September 12, and sometimes lingers as late as September 22. At Omaha it has been recorded from April 20 to September 15, thus apparently arriving there a little earlier than at Lincoln. At Neligh it arrives later and departs earlier than at Lincoln or Omaha, the dates being May 1 to 10 and September 1 to 10. (*Cary, Proc. N. O. U.*, i, p. 25).

Western Kingbird *Tyrannus verticalis* Say.

Over the semi-arid plains and sandhill regions of western and central Nebraska, from about the 100th meridian westward, and in the Pine Ridge of northwestern Nebraska, the Western or "Arkansas" Kingbird is a very common to abundant summer resident and breeder. Eastwardly over the prairie region it occurs in rapidly declining numbers to the Missiuri River, commonly as a migrant but uncommonly as a breeder.

Prior to about 1903 this Kingbird was a rather rare migrant east of the 98th meridian. In fact, a few records from Omaha, Lincoln and West Point, all of migrating birds, constituted the total information at hand concerning its occurrence in the eastern portion of Nebraska. Then in 1904 there were four records of its having been seen in the more eastern counties, these occasioning considerable interest. In 1905 it migrated through eastern Nebraska quite commonly in May, eastward even to the Missouri River, and this unusual influx was recorded by Swenk (*Auk*, xxii, p. 320) with the observation that probably the species was extending its line of migration to the eastward. Apparently such was the case, for the Kingbird has since continued to be a common migrant through eastern Nebraska each May and September.

This Kingbird arrives somewhat later than the common Kingbird. During the decade 1911-1920 the earliest date recorded at Lincoln was May 4. At Neligh Cary found it arriving May 5 to 20 (*Proc. N. O. U.*, i, p. 25). In Sioux County it is common by May 18 (*Crawford, Proc. N. O. U.*, ii, p. 77). In Nebraska nesting takes place in June and July. Departure takes place in Sioux County by about September 11 (*Mickel and Dawson, Auk*, xxxii, p. 75). At Neligh the birds linger until September 10 to 20 (*Cary, Proc. N. O. U.*, i, p. 25). They are rarely seen at Lincoln after the first few days in September.

At about the same time that the Western Kingbird began to be noted commonly during migrations in eastern Nebraska occasional instances of its nesting in that part of the state began coming to notice. As early as 1899 Cary had found it a rare summer resident at Neligh, on the 99th meridian (*Proc. N. O. U.*, i, p. 25). Then on July 15, 1904, I. S. Trostler found a nest of this species in the town of Niobrara, also on the 99th meridian, and later found three other pairs in that town which were also with little doubt nesting. Four years later, on July 26, 1908, R. H. Wolcott found a nest in a planted grove on the south side of Capital Beach, near Lincoln, and the next season, 1909, found two nesting pairs at the same place. Other instances of the nesting of this Kingbird in eastern Nebraska have come to notice with increasing frequency in subsequent seasons, and at the

present time the species is an uncommon, but not rare, breeder east to the Missouri River.

In central and western Nebraska the Western Kingbird has, of course, long been a common and characteristic breeder, along all the wooded streams, both in trees and in brush, and in hackberry pockets in the sandhills. In the western village and town parks it is very common everywhere.

The first record for the state is that of Aughey, who in 1877 reported it as abundant in southwestern Nebraska, especially along the Republican River, a status that has not changed during the subsequent years.

Cassin Kingbird *Tyrannus vociferans* Swainson.

Spreading eastward during the fall migration from its breeding locations in the more elevated mountain valleys of southern Wyoming, the Cassin Kingbird proved to be a rather common migrant in the Pine Ridge of northwestern Nebraska during September, 1919. In 1919 Mickel and Dawson collected this species near Glen on September 6, at the mouth of Monroe Canyon on September 12, and at Fort Robinson on September 20, the last specimen from a flock of 8 or 9 birds. (*Auk*, xxxii, p. 75).

Crested Flycatcher *Myiarchus crinitus crinitus* (Linnaeus).

This flycatcher is a common, or locally rather abundant, summer resident and breeder along the Missouri River and in the larger timber of its principal tributaries in eastern, and especially southeastern, Nebraska, ranging up the Elkhorn to West Point, up the Big Blue to Milford, up the Little Blue to Hastings, up Salt Creek to Lincoln, etc. At Lincoln it is common from May 3 to August 22 and sometimes lingers until September 8. Nesting records are in June. It was first recorded for the state by Thomas Say, who found it at Engineer Cantonment in 1820.

(*Myiarchus cinerascens cinerascens* (Lawrence), the Ash-throated Flycatcher, occurs commonly in Colorado and has been taken at Cheyenne, Wyoming, hence may straggle into western Nebraska.)

Phoebe *Sayornis phoebe* (Latham).

An abundant summer resident and breeder over eastern Nebraska, west to about the 99th meridian, except in the Niobrara valley, where it extends to the 100th meridian or a little beyond.

The first state record is that of Thomas Say, who noted its arrival at Engineer Cantonment on March 22, 1820. Aughey in 1877 recorded this species from Richardson, Lancaster and Dakota Counties, and indicated that it was confined rather closely to the eastern counties. It now extends west commonly at least to Hastings, Kearney, Neligh, Long Pine and Valentine.

The Phoebe has been recorded at Lincoln as early as March

12, and is usually common after March 18. It nests in late April and May and again in July, rearing two broods, and usually departs by October 21, though once recorded on November 2.

Say Phoebe *Sayornis sayus* (Bonaparte).

This shy phoebe of the dryer portions of Nebraska is a very common summer resident and breeder east to about the 100th meridian, and an increasingly uncommon or rare migrant east to about the 97th meridian.

In the Pine Ridge it is very common, and nests in the heads of the canyons, on rocky ledges in the bad lands, and around buttes on the table lands, as well as in out buildings (*Proc. N. O. U.*, ii, p. 77; iii, p. 73). In Scottsbluff County it is equally common and often nests in the structures along the irrigation ditches. At Alliance, Box Butte County, it was noted by Swenk nesting in the cornice of a building on the main street of the town, and at Haigler, Dundy County, nesting under the eaves of a railroad water tank. It nests commonly east to Cherry, Rock and Lincoln Counties. There are two broods a year, one in early May and the other in late June and early July. As a migrant it has been noted at Halsey (Chapman), Comstock (Zimmer), Kearney (Aughey), Ravenna (Swenk) and Holt County (Bruner) and once even at Lincoln (Bruner).

Aughey first recorded the Say Phoebe from the state in 1877, stating that he had observed it only in central and western Nebraska, and mostly at Kearney, Buffalo County. It arrives in early April (Comstock, April 5, 1913), completes nest building in middle May (Chadron, May 18, 1900) and departs in late September.

Eastern Olive-sided Flycatcher *Nuttallornis borealis borealis* (Swainson).

An uncommon or rare migrant over the eastern portion of the state. Aughey stated that he had "only occasionally met it in Nebraska." It has been noted several times near Lincoln: by L. Bruner, by H. B. Lowry on May 9, 1903, by Swenk and Zimmer at Roca, September 4, 1909 (*Proc. N. O. U.*, v, p. 75), by Dawson September 12, 1915, and by Dawson and Mickel May 19, 1920. Bruner has recorded it from West Point and Dickinson from Gresham.

The specimen from Roca, September 4, 1909, is a female and measures: Length 178, wing 102, tail 68, culmen 15, and tarsus 14. It is, therefore, somewhat intermediate between typical *borealis* and *majorinus*, but is nearer the former.

Rocky Mountain Olive-sided Flycatcher *Nuttallornis borealis majorinus* Bangs & Penard.

This recently differentiated form occurs in the extreme west-

ern part of the state during early June, but it is not known to breed there, though it may rarely do so. Cary collected a specimen west of Warbonnet Canyon, Sioux County, June 14, 1901 (*Proc. N. O. U.*, iii, p. 72) and Mickel one at Kimball, Kimball County, June 8, 1919 (*Auk*, xxxii, p. 75). Both specimens are females, and measure, respectively: Length, 177 and 178; wing, 106.5 and 105; tail, 71.5 and 67; culmen, 17 and 16.5; tarsus, 15.

Wood Peewee *Myiochanes virens* (Linnaeus).

A common summer resident and breeder east of the 97th meridian. At Lincoln it arrives about May 19 and remains until September 8. A record from Ashland on May 15, and two from Omaha, on May 8 and 14, would seem to indicate that the Wood Pewee appears first along the more heavily wooded streams of eastern Nebraska, and then works westwardly to the limits of its range in the state. At Omaha, Lincoln, Beatrice, Peru, Weeping Water, Nebraska City and other eastern points it is a common breeder, nesting in June.

The first state record is that of Aughey, who stated in 1877 that there were "a very few of these birds in the timber belts of eastern Nebraska along the Missouri" and recorded a specimen from Dakota City in June, 1869. Evidently since that time the species has pushed westward along the wooded streams and increased in abundance so that where it was then rare or absent it is now common. Occasionally its "*pee-a-wee*" may now be heard within the city limits of Lincoln and other cities and towns of eastern Nebraska.

Western Wood Peewee *Myiochanes richardsonii richardsonii* (Swainson).

West of the 100th meridian in Nebraska this species replaces the eastern *M. virens*, but the ranges of the two species do not anywhere meet. In the Pine Ridge Region it is a common summer resident, having been reported by every bird student working in that region. In 1900 it arrived at Monroe Canyon in the Pine Ridge May 24 (*Crawford, Proc. N. O. U.*, ii, p. 77), and in 1908 Zimmer collected it at the same place on August 19 and 22, thus indicating migration dates very similar to those of *M. virens* in eastern Nebraska. In July, 1910, he found it common at Glen, Sioux County, and collected specimens. In Scottsbluff County it is common everywhere in cottonwood groves and was found almost abundantly in the timber along the North Platte River near Henry, June 18, 1916, where several pairs were found with nearly or quite completed nests (*Swenk, Auk*, xxx, p. 115). Aughey who first recorded the species from the state, stated in 1877 that it was "frequently seen wherever there is a woodland or timber-skirted streams in western Nebraska," and recorded it from Sidney and from "Wood River," meaning probably the head-waters of that

stream in Custer or Dawson Counties, in June, 1875. Bruner noted it along the Dismal River in Thomas County, and in 1911 Zimmer found it in the shrubbery along the Loup River in the same county, August 21 to 28, collecting a male on the first date (*Proc. N. O. U.*, v, p. 81). The eastern limits of its normal breeding range are not well fixed.

Yellow-bellied Flycatcher *Empidonax flaviventris* (W. M. & S. F. Baird.

This retiring and self-effacing inhabitant of heavily shaded and excessively moist woods occurs in Nebraska only as a rare migrant east of the 97th meridian. In 1877 Aughey stated that this species occurred "sparingly in eastern Nebraska," and that he had known it "to breed on the skirts of timber belts along the Missouri River." He also mentions taking a specimen at Dakota City, Nebraska, in July, 1870. But, as *E. flaviventris* is rather strictly a Canadian zone species, and breeds in situations quite different from the habitat in which Aughey thought he found it nesting, he was probably in error in his identification of the bird. Very likely he found *E. virescens* instead, especially as he does not mention that species in his list. One might also fairly assume that his July specimen from Dakota City was likewise *E. virescens*.

L. Bruner has noted *E. flaviventris* as a migrant once each at both Lincoln and West Point, and Zimmer has recorded a specimen that was thoroughly identified by himself and R. H. Wolcott at Roca May 21, 1910 (*Proc. N. O. U.*, v, p. 35), but no specimens taken in Nebraska have been examined.

(*Empidonax difficilis difficilis* Baird, the Western Flycatcher, which represents *E. flaviventris* in the West, and breeds in Wyoming and Colorado from 10,000 feet elevation to the plains, as well as in the Black Hills region of South Dakota, will very likely be found to occur in northwestern Nebraska during migration.)

Acadian Flycatcher *Empidonax virescens* (Vieillot).

Confined during the breeding season to deep and shady woodlands, this flycatcher is to be found nesting only along the Missouri River and the more heavily wooded portions of the lower Platte. The record from West Point by Bruner is probably based on a highly colored male of *E. traillii*. At Omaha it is a fairly common summer resident and breeder, arriving in May, breeding in June and departing in September (I. S. Trostler, L. Skow, etc.).

West of the Missouri River Region there are no records of the occurrence of this flycatcher, even as a migrant, except that of Cary who states that he "took an adult male on Pine Ridge, Sioux County, Nebraska, about fifteen miles from the northwestern corner of the state, on May 26, 1900" (*Auk*, xviii, p. 235), which record was repeated by Crawford (*Proc. N. O. U.*, ii, p. 27). Ridgway accepts this as a probably casual record (*Bull. 50, U. S. N. M.*, iv,

pp. 553 and 555), and it may be valid, but a specimen taken in the same locality two days later by J. S. Hunter, and said to be the same as Cary's specimen (which we have not seen), is *E. traillii brewsteri*, as determined by Dr. H. C. Oberholser. It is therefore altogether probable that Cary's record is based on a misidentification.

Traill Flycatcher *Empidonax traillii traillii* (Audubon).

By far our most abundant and widespread species of *Empidonax*, the Traill Flycatcher, or "Alder Flycatcher" of much of the literature, occurs commonly as a summer resident and breeder and abundantly as a migrant over the state west to about the 100th meridian.

The first record of the species for Nebraska is that of Aughey who in 1877 wrote that he did not distinguish between *E. pusillus* (= *brewsteri*) and *E. traillii*, having only occasionally met either one. Although not definitely saying so, subsequent Nebraska observers have also largely not discriminated between the two subspecies of *E. traillii*.

A series of seven representative specimens taken at Lincoln May 21 to August 15, including three breeding June birds, have been examined by Dr. H. C. Oberholser and all pronounced *E. traillii traillii* (= *alnorum*). Nine additional specimens are identical with this series, and the total series of eleven males and five females proves that this is both the migratory and breeding form at Lincoln. At this point the species is common from May 3 until the end of August and has been noted as late as September 12.

At Omaha, Nebraska City, Union, Peru and other points along the Missouri River this bird has been found to be a common summer resident and breeder. M. A. Carriker, Jr., has given a good account of its habits in that region (*Proc. N. O. U.*, ii, pp. 44-46). Specimens examined from Peru, Union and South Bend are indistinguishable from the series of Lincoln specimens, though Zimmer has recorded an unusually brightly colored male specimen from Lincoln (May 20, 1909) and a large-billed female specimen from Union (July 23, 1910) as *E. t. alnorum*, under the impression that the western form previously known as *E. t. traillii* (now *E. t. brewsteri*) was the prevailing form in these localities (*Proc. N. O. U.*, v, p. 35).

West of the 97th meridian this flycatcher is found in plum thickets and other brush, especially along the rivers and creeks, to at least the 98th meridian. At Neligh Cary found it a common migrant and probably a summer resident, arriving May 5 to 20 and departing August 10 to September 1 (*Proc. N. O. U.*, i, p. 25). From west of the 98th meridian there are no records, and west of the 100th meridian it is apparently replaced by the following subspecies.

There are many nesting records of the Traill Flycatcher in eastern Nebraska, practically all of them in June.

Western Traill Flycatcher *Empidonax trailli brewsteri* Oberholser.

This is the prevailing form of *E. traillii* in the Pine Ridge of northwestern Nebraska where it is a common summer resident, and it also occurs as a migrant and occasional breeder over western Nebraska, probably from about the 100th meridian westward.

A University collecting party, working in Sioux County from May 18 to June 1, 1900, noted this bird repeatedly during that period (*Crawford, Proc. N. O. U.*, ii, p. 77), and a specimen collected in Monroe Canyon on May 28 has been pronounced *brewsteri* by Dr. H. C. Oberholser. During the summer of 1901 the "Alder Flycatcher" was observed all through the summer by Cary and Carriker, who, though they found no nests, regarded it as probably breeding (*Cary, Proc. N. O. U.*, iii, p. 73). L. M. Gates collected a specimen of *brewsteri* (Det. Oberholser) on May 21, 1914, at Haigler, Nebraska, in the extreme southeastern part of the state. Zimmer found the Traill Flycatcher in the brush along the Loup River at Halsey from May 15 to August 31, in 1911 and 1912 (*Proc. N. O. U.*, v, p. 81), and collected three specimens on August 21 and 31, 1911. Unfortunately, these specimens are juveniles, but they have the more brownish color of *brewsteri*.

Least Flycatcher *Empidonax minimus* (W. M. & S. F. Baird).

East of about the 98th meridian this, our smallest flycatcher, is a more or less common migrant, and in the northeastern part of the state, along the Missouri River, it is an uncommon summer resident and breeder. Possibly it may occur as a rare migrant farther west, but has not so been recorded as yet.

It arrives in early May. At Falls City in 1904 Swenk collected a male on May 2. At Lincoln in 1903 he collected a pair on May 9, a date considerably earlier than the other Lincoln dates, which are May 13 to 21. In the fall it is very uncommon at Lincoln, the only date being September 20, 1920 (C. E. Mickel). Apparently it usually migrates a little later than does *E. trailli* from which it is best distinguished in the field by its sharp, snappy "*chc-bee*" note, very different from the shrill, jerky "*wee-zeé-up*" of the Traill Flycatcher. Cary found it a rather common spring migrant at Neligh May 10 to 20, but did not note it in the fall (*Proc. N. O. U.*, i, p. 25). L. Bruner has found it migrating at West Point.

In 1877 Aughey first recorded this species from Nebraska, stating that it was rather common and occasionally bred in the northeastern portion of the state, and recording the taking of specimens at Dakota City in May, June and July of 1865 and 1866. Dr. T. C. Stephens informs us that it nests in that locality at the present time. It also occasionally summers and breeds as far south along

the Missouri River as Omaha, according to L. Skow, I. S. Trostler and others.

Hammond Flycatcher *Empidonax hammondii* (Xantus).

The only state record of this bird, previously unpublished, is that of a specimen collected at Crawford, Nebraska, September 17, 1911, by J. T. Zimmer, and now No. 531 of his collection. It is a male, and clearly shows the characters of the species — chest dark, throat grayish, outer primary slightly longer than fifth primary, emarginate tail with outer web of outer rectrix whitish, etc., while the bill is conspicuously shorter and narrower than in *traillii* or *minimus*. It is probable that this species occurs more or less regularly, though in small numbers, in northwestern Nebraska during migrations, as the species nests in the mountains of Wyoming and Colorado, from the plains up to 8,000 feet elevation.

(*Empidonax wrightii* Baird. Wright Flycatcher. In 1901 Merritt Cary recorded what he called the Traill Flycatcher (*E. traillii*) as frequently seen around the rim rock in the rocky heads of canyons among the "wait-a-bit" brush of the western slopes of the Elk Mountain region of South Dakota, southeast of Newcastle, Wyoming, uttering at short intervals its sharp "*ke-wick, ke-wick*" (*Auk*, xviii, p. 233). However, a male specimen collected by Cary at Elk Mountain, June 10, 1900, proves to be *E. wrightii* as determined by Dr. H. C. Oberholser and there is also a female *wrightii*, collected by Cary at the same place three days earlier, before us. His description of the note of the bird agrees with the note of *wrightii* and not of *traillii*. *E. wrightii* has also been taken at Cheyenne, Wyoming, and almost without question will eventually be found migrating through the Pine Ridge of northwestern Nebraska.)

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EDITORIAL

The brightest spot in the whole summer trip, which the editor was privileged to make last summer, was the stay of his party at the Lake Okoboji McBride Lake Laboratory. It was not merely a haven of rest, after the four days of wallowing in the mud of the incomparably rich soil of Iowa, but as well a haven for study. Dr. Wylie, the Director, and Dr. Stephens, one of our ex-presidents, made our stay of three days the best three days of the whole trip. They were ably seconded by the other members of the staff of the Laboratory.

The short trip to Alaska, after the close of the automobile trip, through the Inside Passage to Skagway, and from there over the White Pass and Yukon railway to White Horse, Yukon Territory, by boat through the chain of Atlin lakes in northern British Columbia, was a fitting climax to the summer wanderings. The most notable birds seen on this trip were the swarms of short-billed gulls along the Inside Passage, and the Hudsonian chickadees and and Townsend's solitaire in the lodge-pole pine forests at White Horse. There was some evidence of a small nesting colony of herring gulls at the north end of lake Bennett. We were there between the visitations of the mosquitoes and the "noseeums," therefore our stay was a pleasant one. If there were migrations in progress no evidence of such could be seen. The weather was cool.

Never in the history of the Wilson Ornithological Club has such a wealth of good material been offered for publication. To the editor it is becoming not only clear but imperative that some plan should be devised immediately whereby more of these papers can be published. The most obvious plan would be to increase the number of pages to 64 per issue, and for this increase in value charge larger membership fees and subscription rates. There is no likelihood that publication prices will ever reach the pre-war rates, or even approach them, at least for some years to come. Reduction of the size of the Wilson Bulletin with membership dues and subscription rates remaining the same would be suicidal. Members should plan to be present at the next annual meeting and be prepared to reach a solution of this problem. It is vital.

COMMUNICATIONS

THE WORK OF THE WILSON CLUB

The question is frequently asked of me by our new members to define, in my capacity as Secretary, just what is the definite work and aim of the Club. As the recipient of a considerable volume of correspondence from our membership, perhaps I may be pardoned for this communication and the ideas set forth.

Among our membership are all sorts and kinds of students of bird life, ranging from those who are interested in the so-called "popular" side of bird study to those who have attained distinction in technical and taxonomic work. Assuming that the major trend of our work should conform to the interests of that large and substantial body of members who have supported the Club through the "lean years" of its existence, it would seem that our ideal work is the detailed, serious and accurate study of our native birds. True as it is that many volumes have been written on the subject and that the several ornithological magazines have published thousands of pages of valuable contributions on the habits of birds, yet none but the misinformed would say that the subject had been exhausted. The formulating of an accurate local list should be the backbone of the work of every observer and this task will require constant revisions and additions as years go by. The annotations to such a list represent the cream of the ornithologist's work and should contain only accurate and substantiated facts as to the breeding or other occurrence of the species at all seasons. Such a list should not be rushed into print for obvious reasons. Supplementing this work it has well been recommended that the observer should specialize on some particular phase of bird study. This may be migration, nesting habits, distribution, bird banding, research, economic investigation or detailed studies of the life histories of certain species. Almost without exception we are hampered by lack of time in our pursuit of bird study. With most of us only recreation hours from our bread and butter struggle are available. For this reason it is well to specialize in order that whatever phase of bird study we undertake may be well done. Most commendable indeed is the observer who balks at no hardships in his efforts to secure accurate and complete information and who possesses the energy and ability to put the result of his work into print where it will be readily available for the use of others. I have known of men who have spent the better part of a lifetime afield and who have built up wonderfully complete ornithological collections, including much rare material; yet these men are practically unheard of. They contributed but little to our fund of information on bird life either because they kept no sys-

tematic notes or because of their procrastination about putting them into printer's ink. The writer does not decry the formation of collections of birds, nests and eggs, but rather advocates them as a means of acquiring knowledge and substantiating ornithological information. (The cats in one suburban block will destroy more song birds in a season than most ornithologists would care to collect in a lifetime.) If, however, one finds that in making such a collection he is merely prompted by a desire for accumulation, or if it is robbing him of time needed for the keeping of systematic notes and for their preparation for publication, then he had best desist in his collecting.

Finally, I would call attention to the work of the U. S. Biological Survey at Washington and the desirability of our coöperating with this Bureau. Migration notes are solicited by the organization and blanks are cheerfully furnished for the purpose. Volunteers are needed in every section for making bird counts and to assist with bird banding. Local lists are also desired and are needed for those whose duty it is to prepare distributional papers. Preliminary local lists, not yet sufficiently complete to offer for publication, should be put in the hands of the Biological Survey and revised from time to time. There are many other ways in which active field workers can render valuable service to The Survey and in turn secure from it much desirable assistance.

I trust that in this rather rambling communication I have clearly given my ideas of the answer to the question mentioned in the first paragraph and that our new members at least will find in it some suggestion for properly directing their activities in the absorbing study of ornithology.

Albert F. Ganier.
Secretary W. O. C.

Nashville, Tenn., May 25, 1921.

FIELD NOTES

PHOTOGRAPHING A KILDEER

The extreme wariness of the Killdeer about its eggs is well known and many an account has been written of the tricks employed by the would-be nest finder to remain in the premises in

order to watch the owner settle upon her real nest and eggs. Before the April snows had entirely left the ground, Mr. Howard T. Middleton happened upon the nest shown in the above picture and laid plans to secure a series of pictures of the bird at her nest. The field was being ploughed at the time and a spadeful of turf, containing the nest, was shifted a few feet to freshly ploughed soil. By means of light cord and small pulleys a contrivance was rigged up by which the parent would snap the shutter when she settled upon her eggs. The feature of this mechanism was a small "snap" mouse trap which the bird could spring with a light pressure on the cord and which in turn exerted a strong pull on the shutter. Through the courtesy of Kodakery we are enabled to reproduce one of the series of five pictures printed in its August number.

A. F. G.

A WHITE COWBIRD

(*Molothrus ater ater*)

On April 15, 1921, Mrs. A. J. Williams of Norman, Oklahoma, called me up, saying there was a "white Cow-blackbird" near her house. On going over there I saw it among a large flock of ordinary Cowbirds and watched it for twenty minutes through field glasses, seeing it in various positions and being able to approach it closely. One foot seemed to be crippled so that it did not walk, but had to hop on the other foot. Its feathers looked somewhat ruffled. Above it appeared to be pure white; but underneath, its

tail was slightly pinkish and there were faint dark stripes on its breast. It was strikingly conspicuous in contrast with the other birds both in flight and on the ground.

MARGARET M. NICE.

Norman, Okla.

COWBIRD LAYS IN PROTHONOTARY'S NEST

The writer does not remember having read of the Prothonotary Warbler (*Protonotaria citrea*) as being among the list of birds imposed upon by the Cowbird (*Molothrus ater*). While collecting on May 22 of this year at Horn Lake, in the southwest corner of Tennessee, the writer found several incomplete nests of this warbler as well as one containing three fresh eggs. On the following day the set was collected, and in the meantime another egg of the Prothonotary and one of the Cowbird had been deposited. The nest was built in a willow stub in a submerged willow woods and was several hundred feet from the shore. An old woodpecker's hole had been used, the eggs being about six inches below the hole. The Cowbird is not a common breeding bird in the lower Mississippi valley. Further south, at Vicksburg, Miss., years ago, of hundreds of nests examined only in one instance was a Cowbird egg found. At Nashville, Tenn., less than one per cent of small nests found hold the eggs of the species.

ALBERT F. GANIER.

Nashville, Tenn.

NOTES FROM ASHTABULA COUNTY, OHIO

White-winged Crossbill. During the winter of 1919-20 I added this species to my list of the birds of this county. Late in November a large flock began to arrive, and remained until the first of March.

Bohemian Waxwing: On December 22 a flock of 32 settled in an apple tree in front of the house. Small flocks were seen until February 18, 1920.

Red Crossbill: On January 20, 1920, a flock of 20 settled in an open field near where I was at work and remained in the neighborhood until the 30th.

Evening Grosbeak: On January 17, 1920, I found one in a small willow tree on the border of a creek, and on the 19th there were two in a thorn bush near the same place. Others were seen at different times until February 15.

Orange-crowned Warbler: On April 29 I found three in a small thicket of swamp white oaks. They remained in the neighborhood until May 9.

Olive-sided Flycatcher: On May 15 I found this species, the first time for the county.

Blue Grosbeak: While looking for birds, on May 21, attention

was attracted to a bird in a thicket of wild crabapples, which I at first sight took to be an Indigo Bunting, but it seemed too large, and of a darker hue, with the distinct wing markings of the Blue Grosbeak. The bird remained very quiet and in full view for at least ten minutes, during which time it was not over twenty-five feet from me.

All of the species are additions to my list of the birds of Ashtabula county.

S. V. Wharram.

Austinburg, Ohio.

TUFTED TITMOUSE IN MINNESOTA

The recording of a Tufted Timouse (*Bacolophus b. bicolor*) in Minnesota is quite unusual, hence the following should be of interest. A single bird of this species was first noted shorted before Christmas, 1920, with a flock of Chickadees, in whose company it remained throughout the winter. The flock spent most of the time among the evergreens of a cemetery, near Northfield, and the Titmouse could be seen almost any day. Toward the latter part of March the Chickadees had paired off and on the twenty-third the Titmouse was found deserted. Fearing that it too would leave the vicinity, and wishing the specimen, I secured it on that day. It proved to be a female, and according to Dr. T. S. Roberts is, so far as he is aware, the first specimen that has been taken within the state. There are seven published records of its occurrence here, of which I have knowledge, and I have word that two or three others have been noted in the state the past winter.

A Myrtle Warbler was noted here on April 10th, which is very early for southeastern Minnesota. The past winter was milder than usual and Juncos, Crows and Brown Creepers were present. A Mourning Dove was noted December 25th at Kingsley, in the northern part of Iowa.

E. W. Johns.

Northfield, Minn.

ROOF-NESTING NIGHTHAWKS

The Nighthawk (*Chordeiles virginianus virginianus*) gets its first name from two Greek words that mean "Sounder of the Evening Lyre." People of Nashville, Tennessee, will readily admit that part of this title is well selected, though they would be slow to find very much music in his calls. In recent years these birds have taken over the gravel roofs of certain buildings right in the heart of the city, presumably to see that their offspring got a place in the sun quite early in their careers. Late in the afternoon and far into the night one can hear the shrill far-sounding "B-e-e-r-b." Ofttimes they swoop down near the ground and their voices sound

above the roar of traffic and the din of auto engines. It is extremely rare that one hears their "B-o-o-m" in the city, but their country cousins are as versatile in these death-defying nose dives as a tramp aviator at a county fair.

A pair of them has taken to "Culture" with a vengeance, hav-

ing for two summers made their home on the roof of the "Home Economics Building" on the campus of "George Peabody College for Teachers." Like many intellectual families the number of offspring is limited and the accompanying picture will show how Mother Chordeiles accepted the social call paid her on a recent morning in mid-July.

George R. Mayfield.

Nashville, Tenn.

WOODCOCK INCREASING

The Woodcock (*philohela minor*) has for a good many years been looked upon the country over as a rare bird and one which has been losing ground to the extent that its extinction has been freely predicted. It has therefore been the source of much gratification to the writer to note the gradual increase of these birds, in the vicinity of Nashville, Tenn., during the past few years. Eight or ten years ago the hunting season for Bob-white was curtailed so that it expired January 1st instead of March 1st. The measure helped materially to restore this species to a semblance of their former abundance, but in a far more marked degree did it give succor to the hard pressed Woodcock. When the "quail" hunters go afield on November 1st most of our Woodcock have migrated further south and few are killed during the two months of the open season. As is well known, the Woodcock is an early breeder and, in this locality, lays its eggs before March 1st. During the former extended hunting season they returned to their favorite nesting grounds while the gunners were still afield and fell easy victims.

The shortened season, however, has practically given them immunity from hunters except of course from a lawless few. Without making any particular search for them, the writer has located not less than a dozen breeding pair, close to town, including three pair almost within the city limits. Considering the relatively small amount of ground covered in my field work it can readily be seen that the Woodcock population must by now be considerable.

Having thus attested to the fruits which have been reaped through protection it becomes my painful duty to record that our local legislators have recently passed a measure, again extending the season on Bob-white to March 1st, within the limits of this county. The bill was "slipped over" during the last few days of the legislative session and passed due to the fact that a self-seeking Game and Fish Commissioner failed to apprise local conservationists of the new law. The very fact that "quail" hunters will be abroad until March 1st, until the law can be repealed, means a backset to our local Woodcock that is disheartening, since few heed, or know of the Federal protection afforded them after January 1st. Bob-white, being neither classified as song or migratory game bird, is subject to no Federal protection at present, but if, by national statute, its pursuit could be eliminated after February 1st, the Woodcock throughout the country would profit thereby and hold their own at least.

ALBERT F. GANIER.

Nashville, Tenn.

"REMIGRATION OF BIRDS"

Instances of the "remigration" of birds, which formed the subject of your recent communication from Gordon Wilson, of Bowling Green, Ky., have been repeatedly noted here. During such spells of very warm weather as were frequently experienced all over the country this winter just passed, our thousands of visiting waterfowl would disappear so completely that hardly a duck or goose would be sighted by hunters for weeks at a time; but the first hint of a coming norther refilled the marshes with the hordes, whose overhead cries can be heard locally any still day or night from September till about the middle of March.

The same holds with regard to perching birds; in very cold snaps even such species as robins, bluebirds, flickers, and many others that do not ordinarily come as far down as the coastal lowlands, with our total lack of trees, are seen in small companies that vanish coincidently with the dying out of the high winds that follow immediately upon their appearance.

Last year, for the first time within my experience, and this extends over a space of eighteen migratory seasons, the first of our martins to appear turned back, after trying to tough out a rather prolonged late cold snap for two days, and did not reappear for more than a week.

Among the birds of apparently limited migration that spent the cold months here are many of our own kinds; they join their southern relatives for varying periods of time, mostly in immense flocks, like the five or six representatives of the blackbird family; or the droves of English sparrows that arrive in flocks early in September; and seek out the rice fields and wild grass stretches of the open prairies.

Catbirds, shrikes, mockingbirds, and their immediate kin, appear and disappear with the shifts in the weather; usually in twos or threes of their own kind, although the three named seem fond of traveling in each other's company.

I have in my miniature aviary a female mockingbird which flew against the screened porch where I had a crippled male until I was afraid a cat would certainly get her; so finally opened the door and let her in with my other birds, where she is perfectly satisfied.

She is a little smaller and darker than our large boldly marked East Texas-West Louisiana mockingbirds, and instead of their sophisticated cold grey eyes hers are of a warm amber. Presumably she is from one of the states north of Texas and Louisiana; but in size and the dullness of her markings she reminds me of the mockingbirds found in the extreme west and northwest of this state, also in upper Mexico and New Mexico.

And since a Groove-billed Ani, whose range is so very far west and south of this section, was shot within a few miles of town last year I have wondered if she might not also have been forced beyond the borders of her natural limits by some such untoward circumstance as brought the ani here.

Also, in other years, several other wanderers from the habitual migratory trails of their kind.

Mrs. Bruce Reid.

Gulf Refinery, Port Arthur, Texas.

A CROW SUICIDE

A friend has told me the following interesting story of a crow committing suicide:

On the afternoon of May 29, 1921, while returning from a swim in Buffalo Creek with several other boys, my friend says they found a crow that was apparently sick or crippled in some way, for it was able to walk but could not fly. Thinking to have some fun, they caught the unfortunate bird and tossed him into a nearby pond (certainly a very disrespectful way to treat a fellow citizen). The pond was very shallow, according to his account, and the crow could have easily waded out had he been so inclined, but instead, thinking perhaps that death awaited him at the shore, he deliberately put his head under water and soon drowned. Whether the pond *was* shallow may be open to question, but if all details are correct it was surely a pure case of suicide.

In *Bird-Lore* for Nov.-Dec. 1915 (page 479) Mr. Forbush tells (quoted by Pearson) of wounded Surf Scoters diving and holding to water plants until they drown in order to escape hunters, but other than this and the instance cited above, as far as my recollection goes, I know of no cases where birds have actually taken their own lives. Perhaps some of our readers can furnish additional information on this subject.

FRED J. PIERCE.

Winthrop, Iowa.

WOODCOCK AND OTHER NOTES FROM ARKANSAS

In March, 1920, the writer saw an American Woodcock in a thickly wooded pasture near Fayetteville, Arkansas. This species formerly nested in this region but has not been observed for many years in any of its former summer haunts. While recently in Dardanelle, and the guest of my keen-eyed and accurate sportsman friend, Mr. G. E. Pilquist, I got the following facts about the nesting of a pair of Woodcock this season in that vicinity.

Dardanelle is on the right branch of the Arkansas River near the famous Dardanelle Rock, around which cluster many Indian legends. Nearby is Mount Nebo, a beautiful isolated peak of the Ozarkian uplift, rivalling Mount Magazine in beauty but not quite attaining its elevation of more than 2800 feet. The swamps and woodlands in this region are particularly inviting to the birds and the streams abound in fish. Considerable game still exists and pearlers and trappers find it still more or less profitable to explore the rivers for their treasures.

About the sixteenth of March a report was brought to Mr. Pilquist of the nesting of a pair of Woodcock about six miles southwest of Dardanelle and some three and one-half miles south of Mt. Nebo. The locality was fully five miles from the Arkansas River. He immediately made an effort to visit the nest. Competent eyewitnesses identified the species, and on the thirtieth of March Mr. Pilquist himself visited the nest, which was placed in a stubble of burned sedge grass, the clump being surrounded with water at the time the bird was seen. The nest was typical in every respect and not more than one hundred yards from a small creek. On the 31st of March the four eggs hatched.

It may be well for the writer to submit here without comment, a list of birds already observed as nesting in this region, specifying those of which eggs have been actually collected with a star. It is possible, of course, to greatly extend this list, and we fully hope to do this as opportunity will permit:

Wood Duck, Great Blue Heron, Green Heron, King Rail?, American Woodcock, *Bob-white, Wild Turkey (nest in adjoining county visited in 1920), *Mourning Dove, *Turkey Vulture (1921), *Cooper's Hawk, *Red-shouldered Hawk, Red-tailed Hawk, American

Sparrow Hawk, American Barn Owl, Great Horned Owl, Barred Owl?, *Screech Owl, Yellow-billed Cuckoo, Belted Kingfisher, Hairy Woodpecker, *Southern Downy Woodpecker, *Pileated Woodpecker (six nests have been located this season; two sets of eggs have been taken, one clutch of four and one of five), *Red-bellied Woodpecker, *Red-headed Woodpecker, *Northern Flicker, Chuck-will's-widow, *Chimney Swift, Ruby-throated Hummingbird, Kingbird, Crested Flycatcher, Phoebe, Wood Pewee, *Blue Jay, *American Crow, *Cowbird, Red-winged Blackbird, *Bronzed Grackle, *Southern Meadowlark, Baltimore Oriole, *Orchard Oriole, Grasshopper Sparrow, *Field Sparrow, *Lark Sparrow, Chipping Sparrow, *Cardinal, Blue Grossbeak, *Indigo Bunting, *Summer Tanager, *Purple Martin, Rough-winged Swallow, Migrant Shrike, White-eyed Vireo, Prothonotary Warbler, Maryland Yellow-throat, *Yellow-breasted Chat, Oven-bird?, *Mockingbird, *Catbird, *Brown Thrasher, *Bewick Wren, *Tufted Titmouse, *Chickadee, *Wood Thrush, *Southern Robin, *Bluebird.

H. E. Wheeler.

Conway, Ark.

THE PRAIRIE WARBLER

In ten or twelve years of bird study it had never been my privilege to see a Prairie Warbler. On August 13, 1917, while spending the day at Sulphur Lick Springs, Ross County, Ohio, a friend and I were looking for birds as usual, when we suddenly came upon what we recognized at first glance to be a male Prairie Warbler. He was not shy and we succeeded in getting near enough to see that he did not have the salmon patch on the back, but upon looking it up found that Prairies do not always show that color in the early fall. As "Birds of Ohio" by Dawson says "not known to breed in Ohio" and also an early fall migrant, we were not sure but it might be a migrant at this date.

On June 11, 1919, two other men and I were walking over the hills of Ross county, Ohio, near Bainbridge, probably then ten miles from Sulphur Lick Springs where we had previously seen the Prairie Warbler, when I heard a new song which I knew at once to be the song of a Warbler, but a new one to me. It sounded but a short distance away and I excused myself and started in the direction of the song. To my delight it flew toward me and alighted in a bush not more than twenty feet away. Behold! a male Prairie Warbler in all his beauty, threw back his head and sang! A song reminding me very much of the Blue-wing a little more musical and having more volume. In walking probably a mile on that hillside, I heard the song of as many as ten or twelve.

There being so many in one place and at that date, I knew

that I had discovered the nesting place of the Prairie Warbler in Ohio.

But not content without further facts, on July 6 Mrs. Henderson, Ted and I started for the hills of Ross County, a distance of some forty miles of very hilly roads. We arrived about noon at this farm, and after climbing the high hill or near mountain, and reaching the far side of the hill we were almost exhausted, for it was excessively hot. The hillside was steep, facing the direct rays of the sun and the undergrowth was not large enough to provide shade, so we had to grin and bear it as long as we could. Reaching the vicinity of the former visit, we heard the song and soon located a male Prairie. At this place the timber and undergrowth was too thick to follow so we went farther, hearing the song frequently.

On a large hillside, which had been cleared of timber several years before and allowed to grow up again in blackberry bushes and undergrowth of from three to ten feet high, was an excellent place for nesting and they evidently like a warm place. It was here that we heard them most. Hearing one near us we located him in a bush fifteen feet away about two feet from the ground with a worm in his mouth. We were so delighted, for certainly we were going to find a nest with young. He sang with the worm in his mouth just the same. He disappeared in a clump of bushes near by and in a few seconds came out without the worm and flew away. As we approached the bush we saw another Warbler not so highly colored as the male, that flew away in the direction of the male, and we felt sure from the color and the mode of flight and actions it must be a nearly full fledged young. We were unable to find any trace of a nest so we concluded that the male was feeding this youngster.

As we had spent so much time on this hillside in the boiling hot sun, without water, we felt we could stand it no longer and left, without actually seeing the nest, but certainly convinced we had definitely located the nesting place of the Prairie Warbler in Ohio. We now have no doubt that the first one we had seen at Sulphur Lick Springs two years before was a summer resident.

Again on May 30, 1920, we were at Fort Hill, Highland County, this State, probably ten miles from the places mentioned above but in the same range of hills. We were on the lookout for strangers in our local ornithology. We had earlier heard notes in this section that had puzzled us but failed to locate the author on this trip. We made the second trip on June 13. While hunting on a hillside near the fort we heard a Prairie singing. We went in the direction of the song and soon found ourselves in the midst of dozens of them, singing everywhere, males and females. Evidently they were not nesting yet as we could not locate a single nest, but there they were, perfectly at home in

practically the same surroundings we had found them in before, an open hillside of briars and second growth, ground that had been cleared years before and allowed to grow up again, facing the south.

We moved on probably two miles in the same range of hills and stopped along the road in a cool shady place for lunch. In the trees and bushes all around us were singing Prairie Warblers, dozens of them, on the same kind of a hillside, except probably a few larger trees. Prairie Warblers, instead of being strangers in this part of the state suddenly became common. But no where else have we ever seen the Prairie Warbler. If any of the readers of this magazine should know of their nesting in Ohio we would be pleased to know of it.

H. N. Henderson.

Wilmington, Ohio.

THE MEADOWLARK AS A CONVERSATIONALIST

The first thing one usually notices about a bird is its notes, plumage or a peculiar habit. These things take first place in memory. A bird's song is frequently its most prominent and pleasing characteristic, and were it not for it a great many birds would never be noticed by the majority of people.

Much has been written in praise of America's bird singers; some poets and authors praise one bird, while others laud another. In my estimation the Meadowlark and certain members of the Thrasher family rank very near first as singers, but I am unable to say which is really the best. However, I believe the Meadowlark's song is the most appreciated, for he comes early in the spring, when there are few birds with us, and it is very doubtful whether any of the later birds can equal his song in either quality or variety.

A study of the Meadowlark's musical vocabulary is a very fascinating one and does not require a great deal of effort, providing, of course, one lives near a region of prairie land within the Meadowlark's range. In the spring months go to a sizable meadow, or better, to a slough where slough grass and other vegetation grow in rank profusion. It is here the Meadowlark is found. If you are a farmer and your work lies nearby, you are indeed fortunate, for several weeks may be profitably spent in such a location before all of the Meadowlarks' songs will be heard.

The Meadowlark is a great conversationalist. He talks to you from morning till night; it matters not what the weather — storm and sunshine are the same. He sings from tree, ground, or in the air, but a fence post, when available, seems to be his favorite perch. Except in infrequent cases, every Meadowlark

seems to have but one song (at least for one day), which he repeats at short intervals throughout the spring months. However, in a large field one can hear a dozen Larks all singing a different tune at the same time.

Now if we were to take these songs, put them together, and assume that they were given by one bird we would have quite an interesting one-sided conversation. It would run something like this: We see the Meadowlark standing on a post repeating, "*Oh, yes, I am a pretty-little-bird*" (the "*pretty-little-bird*" winds up with a trill). In a moment he says, "*I'm-going to-eat pretty-soon.*" Then, suiting the action to the word, he drops out of sight into the grass, and presently we hear him say, "*I cut 'im clean off. I cut 'im clean off*" (this is often followed by "*Yup*"). He flies back to his perch with a bug in his bill, and when he has deliberately eaten it, he—in a fast, sing-song and unmusical voice—says, "*It makes me feel very good.*" From another portion of the field a voice calls, "*Hey, come here, you red-headed Coolie!*" It is probably the irate "Mrs." After hastily cautioning us, "*You needn't shoot my brother Bill,*" the hen-pecked (we imagine) husband flies away with a sputtering note, leaving us with a good opinion of his work as a bug destroyer and musician.*

The average bird's song is given so rapidly and is of such a bird-like quality that an attempt to put it into words is quite impossible if the writer would have his readers understand them as he writes them. With the Meadowlark it is different; the notes are given plainly and with about the same speed as the human voice talks, so are easily put into words.

Fred J. Pierce.

Winthrop, Iowa.

ARE BIRDS WEATHER PROPHETS?

In looking through an old record book, I found a curious note about birds oiling their feathers before a storm. It is of an interrogative nature, and I pass it on to the reader with the hope that it will at least be of interest, even though no conclusions are reached.

It seems I had heard some one say that birds were endowed with remarkable powers of observation, could tell when a storm was approaching, and had forethought enough to use their secretion of oil on their feathers to make them more waterproof. This wierd and, as perhaps I should say, unreasonable story, interested me. One lady told me that she had watched Mourning Doves industriously oil their coats before a mid-summer rain, but further

* Many other phrases are in common use with Meadowlarks, but the ones given above are the ones most frequently heard and easily understood.

than this I could get no information, and after making a note of it the subject was forgotten.

Birds would be as likely to preen their feathers before a storm as at any other time, and it might be easy to imagine a connection in this respect, while a definite answer would be very difficult to obtain. If any reader has ready information on this subject, I should be very grateful if he would impart it.

FRED J. PIERCE.

Winthrop, Iowa.

CARDINALS AT WAYALUSING, WISCONSIN

Mr. Howard Clark Brown's notes on the Cardinal lead me to offer my experiences with the species here. While I was making a bird count in the woods in summer I found fully as many cardinals as we find here in winter. They were about their nesting activities, and of course secretive and not easy to find. In the winter they find the food easier to get and more abundant at the lunch counters than in the woods, therefore one finds them plentiful in places where they are easily seen. They break up the big kernels of corn with a sort of churning movement of their bills. I once saw a male cardinal feed his mate while she was sitting on the nest. He broke the kernels of corn up and then fed the pieces one by one to the female, putting them into her bill. In the winter one is sure to find cardinals about corn cribs where the corn can be gotten at. Cardinals also like nut meats and squash and pumpkin seeds. Like many of our native birds they are tormented by the English sparrow. A pair tried to nest in the vines on my neighbor's porch. Three eggs were laid before the sparrows found the nest. Then the sparrows broke one of the eggs. The cardinals succeeded in hatching one young, but the sparrows killed it and tore the nest to pieces. Another pair of cardinals tried to build a nest in some grape vines near the house, but as fast as the cardinals would build it the sparrows tore it down. The cardinals finally got discouraged and went away. Three pairs of cardinals nested near my house last summer. Senator Robert Glenn found the first cardinal here in 1906. Now there are dozens of them.

MRS. JODA MALIN.

Wayalusing, Wis.

NOTES—HERE AND THERE

Conducted by the Secretary

At its last annual meeting The Wilson Club passed resolutions supporting national legislation designed to prohibit the construction of dams and water power plants in our National Parks. It is good news to know that this amendment passed and now no such development can be carried out without special act of Congress. By the former law such permission could be granted by the Federal Power Commission.

Dr. R. M. Strong, our President, spent his vacation as usual on the Great Lakes, where at one time or another he has visited practically all of the breeding colonies of gulls and terns. During the "indoor season" Dr. Strong spends his spare time delving into the little worked field of avian anatomy.

Our worthy contemporary, The Auk, finds itself a victim of the printer's strike and its July number is something like two months behind.

The annual meeting of the American Ornithologist Union will be held in Philadelphia during the week of November 14th, 1921.

Additional volumes of the Life Histories of North American Birds are being looked forward to with keen anticipation. Mr. A. C. Bent's first volume, on The Diving Birds, is to be followed by one on The Gulls and Terns, which is now set up in type. The manuscript for the third volume, covering Pelicans and Petrels, is complete and the author is at work on a fourth volume, which will treat of the Ducks and Geese. When the species not covered by Bendire have been disposed of, it is to be hoped that the way will be made clear for the republication of the Bendire volumes, revised to date and uniform in size with those now being issued.

Bird banding has received a most remarkable impetus during the past few years and to complete the "chain of evidence" a vigorous campaign of winter trapping is desirable. This is particularly needed from southern localities and offers a fertile suggestion to our southern members. Full instruction and explanation of the work is embodied in Department Bulletin, "Instructions for Bird Banding," by F. C. Lincoln, and copies may be secured gratis by addressing The Biological Survey in Washington.

Perhaps no one item is so useful for attracting and retaining winter birds about the premises as a brush pile constructed in a thicket. The writer has a copse near his home in which he constructed a brush pile of considerable size and no less than five species of winter birds used it as a refuge and roosting place throughout the past winter. The higher the pile the more acceptable it is.

Dr. Lynds Jones has returned from his usual summer "overland" trip to the Pacific coast. The party of biological students, whose studies and observations he directed en route, closed their notebooks at Tacoma and, scattering, left our editor to pursue his way homeward according to his own whim.

Perhaps none of our birds have benefited as greatly, through federal legislation, as has the robin. It is now an abundant summer bird in latitudes where it was formerly known only as a migrant and in the south, in late winter, is present at times in incredible numbers. The Biological Survey is finding itself in the difficult position of having to give relief to northern orchardists and at the same time to uphold the import of the law. Six northern states have been allowed to issue permits for the shooting of Robins between May 15th and July 15th, where they are found to be injuring cherries and other crops. Such permits will no doubt be often abused but, all things considered, any other course than the one pursued would cause an undesirable reaction in the real cause of bird protection.

Particular attention is called to the paper by Mr. Frank L. Burns, now running in The Bulletin, as being one of the most valuable contributions to ornithology which has appeared in late years. Mr. Burns' paper in the March, 1915, Bulletin, on the incubation period of our native birds, was a fitting prelude to the present articles.

Reports are coming in from our members that "the woods are full of 'em." Not some rara avis, if you please, but the illicit rum still, which vies with Bubo and the Pileated Woodpecker in seeking out the dark and unfrequented corners of our woodland fastnesses. The writer has himself artlessly sidestepped more than one of them during the season just passed.

Dr. Alexander T. Wetmore has recently returned from a year's stay in Argentine, Paraguay and Uruguay, where he was sent by the Biological Survey to investigate the status of those of our migratory birds which spend the winter there. It is to be hoped that the information gained will help to clarify some of the questions which have heretofore been the subject of conjecture; for instance, we should be glad to learn if our wintering chimney swifts were to be found and if so in what numbers. Dr. Wetmore's chief mission was to gain accurate information on which to base a migratory bird treaty with South American countries.

Members should keep in mind the fact that our annual meeting will be held in Chicago during the week following Christmas, and plan to be on hand. Further particulars will be given in our December issue.

PUBLICATIONS REVIEWED

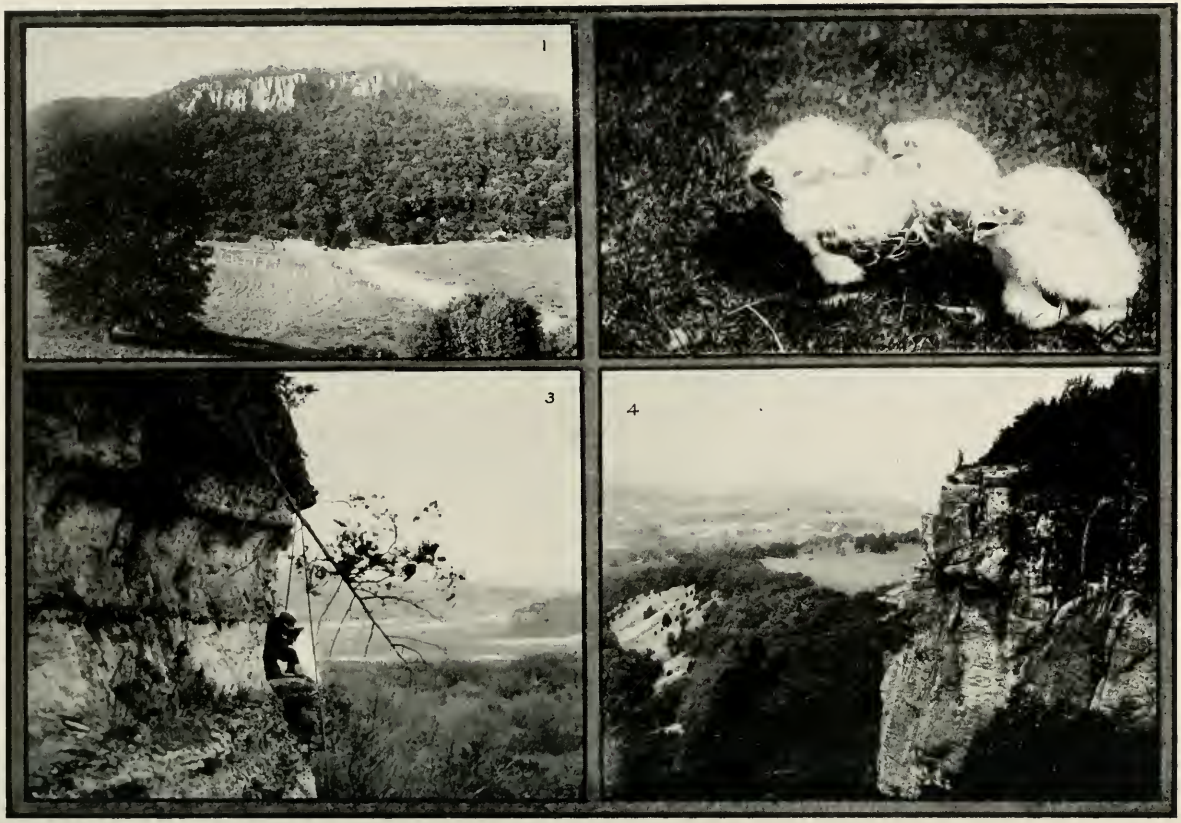
BIOLOGICAL SURVEY OF LAKE MAXINKUCKEE, IND., BY EVERMAN AND CLARK *

Residents of the middle west, particularly those of Indiana, will find in this work a large fund of information on the fauna common to the region. That portion of the two volumes devoted to a list of the birds is relatively small, covering 100 of the 1170 pages and recording 175 species. The list has been presented in annotated form and no space has been consumed with descriptions, range, etc., which in the present case seems commendable. A considerable lot of original information is contained in the notes and where species are rare the author has given definite dates and records instead of indulging in generalities. This practice could well be followed by other authors since the day is past when we are content to take an author's statement, regarding an unusual species, that "it is still to be found," without giving supporting data. The water birds have been most partially noted, as might be expected, and the author has shown particular interest in the nidification of the summer residents. Professor Barton Warren Everman is the author of this section of the work.

Other chapters deal more or less exhaustively with the mammals, reptiles, amphibians, fish, mollusks, crustaceans, insects, etc., etc., and serve well to call our attention to the fact that there is much of interest in nature aside from ornithology. The Indiana Department of Conservation under the interested direction of Mr. Richard Lieber is to be commended for its part in getting this work "through the mill" and before the public.

A. F. G.

*Lake Maxinkuckee, a physical and biological survey. By Barton Warren Everman and Howard Walton Clark. Pub. by The Dept. of Conservation, State of Indiana, 1920. Vols. I and II, 660+512 pp., 91 illustrations.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KEY TO PLATE.

Fig. 1 — Gibralta Rock from the south, Columbia County, Wis.

Fig 2 — Young Duck Hawks, removed from nest.

Fig. 3 — Nesting ledge of Duck Hawk in Sauk County, Wis.

Fig. 4 — Gibralta Rock, showing commanding point in center of picture, where Duck Hawk invariably alighted on thir trips to and from the nest.

(Birds of Wisconsin, p. 66) give the following information: "Formerly bred at Racine, and has been known to remain at Lake Koshkonong through the summer. . . . We have seen it in summer along the south shore of Lake Superior, where it appeared to be nesting on the rocky ledges."

My own field work has fortunately included some interesting experiences with the Duck Hawk in Wisconsin and the following notes are offered:

On May 20, 1911, an adult female, one addled egg and one downy young, were collected about eight miles below Prairie du Sac, on the Sauk county side of the Wisconsin River, by Mr. Bert Laws and the writer (see Auk, Jan. 1917, p. 64-65). Here for over a mile the sandstone bluffs, forming the western boundary of Sauk Prairie, abut on the river, the perpendicular, beautifully modeled rock faces furnishing an ideal nesting environment for this species. Mr. Laws states that they have nested on one or another of these cliffs for over twenty-five years to his knowledge. Early this spring (1921) he noted a pair frequenting the most easterly of these cliffs, known as Ferry Bluff, almost directly across the river from his home. On April 13th, in a pouring rain, we succeeded in locating their three eggs on a ledge having a northeast exposure, overlooking a big slough and miles of heavy river timber. The female sat very closely, only betraying the location of her treasures when a stone thrown from below, landed on the ledge beside her. A well "white-washed" hole near the top of the cliff, a short distance from the nesting ledge, was the regular roost of the male, and here he sat, framed by the circular opening, when we first approached.

As may be seen by the accompanying photograph (Fig. 1), the ledge was perfectly protected from predatory animals, and we ourselves could only reach it with the aid of ropes from above. Fortunately, however, we could see the eggs from the top of a tall basswood tree that grew out from a loam-covered rock mass well up the cliff.

This pair were quite undemonstrative, though the male would occasionally dart by at tremendous speed while one

was on the nesting ledge. Both birds circled nearby, keeping up their harsh, rasping call, somewhat like the alarm "quack" of a mallard hen, many times magnified. On May 15th, after Mr. W. D. Richardson of Chicago, was through photographing them, the one addled egg and two newly hatched young (one of which had been crushed, probably by the parent) were collected, as well as the adult male, the female being purposely spared in hopes she would again nest in the neighborhood. As is usually the case she was a great deal larger, and appeared to be somewhat slower than her trim, equally handsome mate. The frequency with which addled eggs occur and the mortality of the young, seem to be important factors in preventing an undue increase of this rapacious species.

Assuming that incubation had just begun when the eggs were found, April 13th, they were incubated at least thirty-one days.

Remains of the following species of birds were found from time to time on the nesting ledge, or in expelled pellets beneath, Kingfisher (whole head), Domestic Pigeon, Woodcock (hind quarters and bill), Meadowlark, Red-winged Blackbird (numerous), Robin, Bronzed Grackle, Flicker and young chickens.

On May 31st Mr. Albert Gastrow and the writer found another pair nesting in a great cliff, appropriately named Gibralter Rock, near the town of Okee, in Columbia County, about seventeen miles as the crow flies from the Sauk County locations. Situated in a rich farming country, this impressive bluff rises over four hundred feet above the marsh at its base. The south side has a sheer drop of one hundred and twenty-five feet from the top, crowned with a beautiful grove of pine and cedar, to the steep rock-strewn slope below, which is covered with pine and deciduous trees. Lake Wisconsin lays a mile to the north, with bays cutting in still closer on the east and west, forming the desirable combination of precipice and water.

Here on a short ledge, protected by a shelving rock, were three husky young Duck Hawks, nearly as heavy as their parents, with wing and tail quills just appearing

through their coats of white down. The condition of the young and the nesting site being ideal for our proposed group for the Milwaukee Public Museum, a return trip was made next day, with Mr. George Shrosbree, Chief Taxidermist of the institution, and Mr. E. D. Ochsner of Prairie du Sac, well equipped with ropes and other paraphernalia. Our first move called for the collection of the female, and this pair, whose existence depended on eternal vigilance, were extremely wary and would not come near if they suspected any one was present. They invariably perched upon a commanding point of rock, however, on their trips to and from the nesting ledge. Covering this favored spot with the shotgun, I remained concealed for four hours under a pile of juniper limbs on a nearby ledge before the magnificent bird finally returned and was secured. By this time night was fast approaching so the comparatively easy descent was made to the nesting ledge and the young collected. This spot, so offensive to the nose, pleased the eye, both on account of the beautiful panorama spread below, and the immediate environment. Clumps of flowering Columbine grew on little used parts of the ledge and in nearby crevices, as well as Alumroot, Golden Ragwort and Broad-leafed Panic Grass. Scattered about were remains of Mourning Doves, Blue Jays, Green Heron (whole head and neck) and others. For a time nearly a pint of corn and ground feed proved mystifying, till I happened to think of the crops of domestic poultry! The stomach of the female, later examined, contained the remains of three young chickens.

The eyrie was about twenty-five feet from the top and a hundred from the bottom. These young falcons were without exception the most savage youngsters I ever encountered, biting and clawing at every opportunity, and their harsh screams, similar to those of the adult, were deafening at such close quarters. It is interesting to note, however, that they kept perfectly quiet for hours at a time while their parents were absent on hunting forays, but detected their approach at a great distance and screamed lustily.

On returning a few days later to show the site to Messrs. S. Paul Jones and Warner Taylor, Wilson Club members from Madison, we were surprised and delighted to see the male circling over the Rock in company of another mate, perhaps the widow from Ferry Bluff! Though pirates, and pests to the neighboring farmers without doubt, we could not help hoping that these birds, so inspiring to observe, would nest again on picturesque Gibraltar, probably their home for ages.

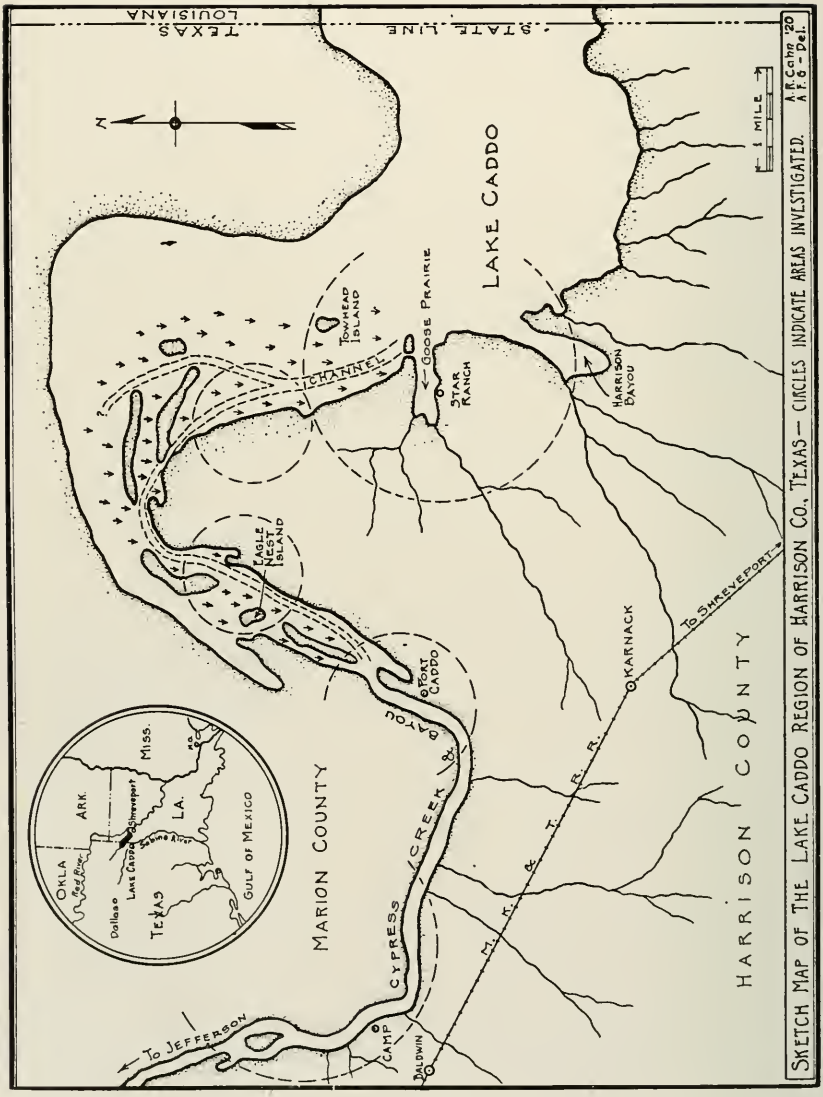
No opportunity presented itself to investigate a report that Duck Hawks nested in the Devil's Lake region, a scant five miles to the north, where the necessary combination of precipice and water also occurs.

Milwaukee, Wis.

SUMMER BIRDS IN THE VICINITY OF LAKE CADDO, HARRISON COUNTY, TEXAS

BY ALVIN R. CAHN

Probably few states in the union can compare with Texas from the point of view of topographic diversity and climatic variations. From the swampy marshes on the gulf coast to the heavily timbered regions, and from the great open, semi-arid plains to the mountainous regions of the trans-Pecos country, there extends practically every possible type of environment one could hope to find within any single state. Such diversity of conditions would lead even the uninitiated to suspect a large biota in point of number of species, and such a suspicion is most certainly verified in fact. Coupled with this environmental diversity is the fact that Texas lies at the focal point of many of the routes taken by our migratory birds, so that it is not surprising that this state should head the avifaunal list with 546 species within its borders. Within this area of 265,780 square miles the species of the east meet many of those of the west, and a certain amount of over-lapping occurs.


LOUISIANA
TEXAS
STATE LINE
LAKE CADDO
MARION COUNTY
HARRISON COUNTY
CHANNEL
TOWHEAD ISLAND
GOOSE PRAIRIE
STAR RANCH
HARRISON BAYOU
EAGLE NEST ISLAND
FORT CADDO
KARNACK
To SHREVEPORT
To JEFFERSON
CAMP
CYPRESS CREEK
M. K. & T. R. R.
1 MILE
N
OKLA
ARK.
MISS.
LA.
TEXAS
GULF OF MEXICO
Dallas
Shreveport
Sabine River
Red River
A.F.Cahn '20
A.F.G - Del.
SKETCH MAP OF THE LAKE CADDO REGION OF HARRISON CO., TEXAS — CIRCLES INDICATE AREAS INVESTIGATED.

From the ornithological point of view Texas is still virgin territory. Certain regions, such as the Waco district, have been worked up and lists published, yet some of these lists, coming from near the same localities, do not always agree as to the abundance — or even the species — of birds in the region. This divergence is due largely to yearly variations in migratory movements as dependent upon climatic conditions, and to the very definite restriction of paths of migration due to topographic conditions — a restriction drawn much more closely in Texas than in any other region I have seen — as I hope to show in a later paper. By far the largest portion of the state is still untouched in so far as detailed avifaunal studies are concerned, and until these studies are made, nothing will be definitely known as to the exact limit of the ranges of the various species found within this great state. To say that a species "occurs in Texas" is about as vague and valueless as to say another "occurs in Europe." In order to help further the work already done along the lines of investigation of specific regions, the present writer has undertaken avifaunal studies in various parts of the state, the first of which is offered herewith.

In all the ornithological literature which the writer has examined, there has been found not one reference to Lake Caddo. This lake, one of the largest (if not *the* largest) in the south, is, roughly speaking, wishbone shaped, the neck and shoulder of the northern wing lying in Louisiana, the whole of the southern wing and the tip of the northern wing in Texas. It is with this southern wing, some 20 miles in length, separating Marion and Harrison counties, that this paper deals. So far as the writer knows, there is no map published of the region under discussion that even approaches accuracy. To give future workers some idea of the regions investigated by the writer, the accompanying sketch map is offered. Be it understood, however, that the actual conditions are far more complicated than the map seems to indicate!

Lake Caddo lies in a shallow basin, hemmed in by an

almost impenetrable cypress swamp, making the exact outline of the lake somewhat indefinite at best. The shores are so low that any slight rise in the level of the water tends to change entirely the outline of parts of the lake. During the writer's stay in May and June (1920) the heavy rains up country had raised the water so that in many places trees for hundreds of feet beyond the ordinary boundary of the lake stood two feet or more in water. From this it will be seen that a map of the region this week may prove entirely incorrect next month! In many places the lake is shallow, and studded with knotty cypresses (*Taxodium distichum*). Islands are abundant — though they may often be under water — and furnish ideal breeding grounds for herons, water-turkeys, ibis and other seclusion-loving species. Spanish moss (*Dendropogon usneoides*) drapes everything, and the semi-tropical aspect is carried further by the abundance of water moccasins (*Ankistrodon piscivorous*) and alligators (*Alligator mississippiensis*). The characteristic trees of the highlands surrounding the swamp itself are the oaks, with the white (*Quercus alba*), red (*Q. rubra*), Black Jack (*Q. marylandica*) and live (*Q. virginia*) predominating. On many of the ridges the short-leaved pine (*Pinus echinata*) is common.

The Caddo lake region is to-day a bird paradise, and one of the very few spots in all Texas that is suitable as a game refuge. Within its bounds the last remnants of nearly extinct species still cling to existence. If this region could be set aside, it is well within the realm of possibility that such species might still, under adequate protection, be saved for future generations. Unfortunately, however, the concept of conservation in Texas is still beyond the grasp of the public mind, and the sentiment for protection of wild life is almost lacking. It would seem as if every state must learn the lesson of conservation for itself, for it is rare that one state profits by the experience of its neighbors, costly as it may have been. In spite of its great area, the wild life of Texas is going — not rapidly, but steadily.

The writer wishes to express his sincere appreciation to the following people who made possible his visit to Lake Caddo: Mr. and Mrs. W. C. and Dr. and Mrs. J. F. Rosborough of Marshall, Texas, and to Mr. C. J. Rosborough, Jr., who accompanied the writer to the lake, where their knowledge of the region made movement possible.

A list of the summer birds of the region follows:

1. **Pied-billed Grebe.** *Podilymbus podiceps* (Linn.).

Three seen near Star ranch, and two at Eagle Nest Island and Baldwin, the latter accompanied by two young.

2. **Laughing Gull.** *Larus atricilla* Linn.

The one seen over Eagle Nest Island was most likely a straggler from the coastal breeding grounds, having possibly followed up the course of the Sabine or Red river.

3. **Forster's Tern.** *Sterna forsteri* Nutt.

Two seen near Marshall, and several observed over the lake. Probably either stragglers from the coast, or late (non-breeding) migrants.

4. **Common Tern.** *Sterna hirundo* Linn.

Seen over the lake, and on one occasion observed carrying a small fish, indicating that the species may breed in the vicinity of Star ranch.

5. **Anhinga.** *Anhinga anhinga* (Linn.).

A colony composed of between seventy-five and one hundred pairs found breeding on Engle Nest. On June 8 this rookery contained eggs nearly ready to hatch, and young birds about two weeks out of the eggs. Seen commonly at all points of the lake.

6. **Mexican Cormorant.** *Phalacrocorax vigua mexicanus* (Brandt).

Two seen near Eagle Nest Island, but there is no evidence of breeding.

7. **Hooded Merganser.** *Lophodytes cucullatus* (Linn.).

Several individuals of both sexes seen at various points on the lake. It is not unlikely that they breed in the vicinity.

8. **Mallard.** *Anas platyrhynchos* Linn.

Three mallards were seen on the lake. These birds may well have been "cripples" from the preceding winter, as the species does not belong here in the breeding season.

9. **Mottled Duck.** *Anas fulvigula maculosa* (Senn.).

A single pair, flushed in Goose Prairie, is the only evidence at hand concerning this species, which must be considered rare in this section of the state.

10. **Blue-winged Teal.** *Querquedula discors* (Linn.).

About a dozen birds were flushed in various bayous about the

lake and, as both sexes were seen, it is not unlikely that they breed here. These birds were not cripples.

11. **Wood Duck.** *Aix sponsa* (Linn.).

To one familiar with the scarcity of this duck in the northern states, its abundance in Lake Caddo was a revelation. From twelve to over fifty birds were seen daily. Breeds commonly throughout the region, and the general opinion seems to be that, while greatly decreased in numbers over former years, the wood duck is at the present time doing a little better than holding its own. However, large numbers are undoubtedly killed during the hunting seasons in the general duck slaughter which takes place on the lake.

12. **Wood Ibis.** *Mycteria americana* Linn.

A single individual was found in the tangle of cypress and moss of Eagle Nest Island. Very rare in this part of the state.

13. **American Bittern.** *Botaurus lentiginosus* (Montag.).

Two bitterns were found in Goose Prairie, and three near Baldwin.

14. **Least Bittern.** *Ixobrychus exilis* (Gmel.).

Breeding in considerable numbers where suitable rushes afford a nesting site. More common in bays and pockets than along the lake proper.

15. **Ward Heron.** *Ardea herodias wardi* Ridgway.

Seventeen nests were found on Eagle Nest Island. The nests were placed in the tops of cypress trees, the lower branches being occupied by the anhinga nests. The nests all contained young almost ready to fly. These birds were typically *wardi*. Other great blue herons seen around the lake lead the writer to believe that *Ardea herodias herodias* also occurs in the neighborhood, but he is unable at the present time to offer any data.

16. **American Egret.** *Herodias egretta* Gmelin.

At the edge of this same herony, which contained ward herons and anhingas, two nests of this species were found—the last remnant of a colony. Once abundant about Caddo, this species is practically gone from this region. It is highly possible that in other, more inaccessible sections of the vast cypress swamp surrounding the lake there are other isolated remnants, and perhaps also some *Egretta canididissma*, and it might be possible, by jealous guarding of this area, to bring back these nearly exterminated species to the avifauna of Texas.

17. **Louisiana Heron.** *Hydranassa tricolor ruficollis* (Gosse).

Common in all parts of the lake visited. Breeds on Eagle Nest Island.

18. **Little Blue Heron.** *Florida caerulea* Linn.

A small colony breeds on Eagle Nest Island. When this herony was visited the young were for the most part out of the nest. Both adults and young were often seen about the lake.

19. **Green Heron.** *Butorides virescens virescens* Linn.

A common breeding species, seen practically every day.

20. **Black-crowned Night Heron.** *Nycticorax nycticorax naevius* (Bodd.).

Several seen near Fort Caddo and Baldwin, and probably a breeding species.

21. **Yellow-crowned Night Heron.** *Nyctanassa violacca* (Linn.).

A single individual seen on Goose Prairie is the only bird of this species seen.

22. **King Rail.** *Rallus elegans* Aud.

Seen only once, on Goose Prairie, but heard several times about Baldwin. Probably breeding.

23. **Florida Gallinule.** *Gallinula galeata* (Licht.).

Five birds seen on Goose Prairie, where they probably breed.

24. **American Coot.** *Fulica americana* Gmel.

Seen in small numbers when rushy or reedy shores were found, and where the species breeds.

25. **Woodcock.** *Philohela minor* (Gmel.).

Of rather rare occurrence about Lake Caddo, but more common about Marshall. The center of distribution seems to be the "Big Thicket" of San Augustine county to the south, and the birds probably come up through the tangle of the Sabine river bottom.

26. **Wilson's Snipe.** *Gallinago delicata* (Ord.).

One flushed from a field about five miles east of Marshall on May 31. Probably a late straggler, as the birds are not known to occur during the summer, though abundant in the spring and fall.

27. **Upland Plover.** *Bartramia longicauda* (Bechst.).

Two seen near Marshall on May 31. Probably late migrants.

28. **Spotted Sandpiper.** *Actitis macularia* (Linn.).

Only one seen. What it was doing so far south on May 30 is a question.

29. **Killdeer.** *Oxyechus vociferus* (Linn.).

Common summer resident and breeding species. Abundant about Marshall and in the fields beyond the swamps in the vicinity of the lake. Eggs about to hatch on June 1.

30. **Quail.** *Colinus virginianus virginianus* (Linn.).

Abundant in all suitable localities. The quail is still abundant in eastern Texas, but let the slaughter go on as it now is, and eastern Texas will soon find itself in the same predicament as the northern and eastern states regarding this most valuable bird. No one pays the slightest attention to the fact that it feeds on the cotton boll weavil (*Anthonomus grandis*).

31. **Attwater Prairie Chicken.** *Tympanuchus americanus attwateri* (Bend.)

Rare breeding species. Formerly abundant, now nearly gone from this region. One small flock of three was seen near Marshall.

32. **Wild Turkey.** *Meleagris gallopavo silvestris* Vieillot.

Still found some numbers in northeastern Harrison county by those who know its haunts. Mr. W. J. Rosborough of Marshall, got an eighteen pound gobbler during the hunting season of 1919, in the heavily wooded hills about Lake Caddo, and he assures the writer that there are more where this one came from. Resident breeding species.

33. **Mourning Dove.** *Zenaidura macroura carolinensis* (Linn.).

Abundant resident and breeding species throughout the county. Being classed as a game bird, great numbers are killed yearly during the three and a half months' open season. With the increase which occurs yearly in the number of hunters, the present abundance of the mourning dove can not long continue.

34. **Turkey Vulture.** *Cathartes aura septentrionalis* (Linn.).

The common vulture of the region. Seen daily in all regions visited. Breeds on the ground under brush and tangled vines.

35. **Black Vulture.** *Catharista urubu* (Vieill.).

Much less common than the above vulture, only two birds of this species being seen, both near Port Caddo. Resident breeder.

36. **Swallow-tailed Kite.** *Elanoides forficatus* (Linn.).

Rare. Two seen flying low over camp at Baldwin on June 11.

37. **Red-tailed Hawk.** *Buteo borealis borealis* (Gmel.).

Seen and heard daily in all parts of the county visited. Seen carrying food on June 3, indicating possible breeding in the vicinity of Lake Caddo.

38. **Cooper's Hawk.** *Accipiter cooperi* (Bonap.).

Known locally as the "blue darter." Abundant breeding species.

39. **Florida Red-shouldered Hawk.** *Buteo lineatus alleni* Ridgway.

Several seen about Port Caddo, Baldwin, and Star Ranch.

40. **Sparrow Hawk.** *Falco sparverius sparverius* Linn.

Abundant breeding resident. Found more commonly about the edges of the woods and near open fields than elsewhere.

41. **Osprey.** *Pandion haliaëtus carolinensis* (Gmel.).

Considering the wonderful food supply available for this bird, and the abundant nesting sites, it is surprisingly uncommon. Only four fish hawks were seen—three at Baldwin, and one at Eagle Nest Island.

42. **Florida Barred Owl.** *Strix varia alleni* Ridgway.

Heard a number of times about Goose Prairie and elsewhere, but seen only once, near Port Caddo. Common breeding species.

43. **Screech Owl.** *Otus asio asio* (Linn.).

Not seen, but heard at Star Ranch and Port Caddo. Said to be common, and undoubtedly breeds throughout the region.

44. **Great Horned Owl.** *Bubo virginianus virginianus* (Gmelin).

Common breeding species about the heavy timber, especially about Baldwin and Port Caddo.

45. **Yellow-billed Cuckoo.** *Coccyzus americanus americanus* (Linn.).

The only species of cuckoo seen. Fairly common about Marshall; two near Star Ranch, and heard in numerous places. Old cuckoo nest found near Baldwin.

46. **Kingfisher.** *Ceryl alcyon* (Linn.).

Common in some places about the lake, but not as abundant as might be expected considering the abundance of food. However, there are but few available nesting sites near the lake, which may account for the few seen during the breeding season.

47. **Southern Hairy Woodpecker.** *Dryobates villosus audubonì* (Swain.)

Common breeding species, seen many times.

48. **Southern Downy Woodpecker.** *Dryobates pubescens pubescens* (Linn.).

Several seen near Marshall, and two near Star Ranch. Fairly common breeding species.

49. **Pileated Woodpecker.** *Phlœotomus pileatus pileatus* (Linn.).

Still found in some numbers about the lake, but is still on the decline in other localities in the county. The heavy timber about the lake offers a good protection to the species, and it is safe here for some time to come.

50. **Red-headed Woodpecker.** *Melanerpes erythrocephalus* (Linn.).

A common breeding species about the woodlots; not common about the lake.

51. **Red-bellied Woodpecker.** *Centurus carolinus* (Linn.).

Two seen near Marshall, and none about the lake.

52. **Flicker.** *Colaptes auratus auratus* (Linn.)

Common breeding species near Marshall, and seen several times at Star Ranch.

53. **Chuck-will's-widow.** *Antrostomus carolinensis* (Gmel.).

Never seen, but heard night after night at all points on the lake. A common breeding species.

54. **Whip-poor-will.** *Antrostomus vociferus vociferus* (Wils.).

One seen at Star Ranch, but the species was heard calling nightly at all points on the lake visited. The preceding species was heard more commonly about Port Caddo, while the whip-poor-will predominated at Star Ranch and Baldwin.

55. **Nighthawk.** *Chordeiles virginianus* (Gmel.).

The writer is unable to say whether this nighthawk, seen several times over Marshall and quite frequently about Port Caddo, is *C. virginianus virginianus* or *C. virginianus chapmani*, as he was unable to collect any specimens for identification.

56. **Chimney Swift.** *Chætura pelagica* (Linn.).

Abundant about Marshall, and about the negro cabins throughout the region. Breeding in the chimney of the ranch house at Star Ranch.

57. **Ruby-throated Hummingbird.** *Archilocus colubris* (Linn.).

Seen several times about the flower gardens in Marshall, and once at Port Caddo.

58. **Kingbird.** *Tyrannus tyrannus* (Linn.).

Common about Marshall; less so near the lake. Nest and eggs found at Star Ranch.

59. **Crested Flycatcher.** *Myiarchus crinitus* (Linn.).

One seen at Jefferson (Marion county), just over the Harrison county line, at the northwest end of the lake.

60. **Phœbe.** *Sayornis phœbe* (Lath.).

Common breeding species about Marshall and the cabins in that vicinity. Nesting near Star Ranch.

61. **Wood Pewee.** *Myiochanes virens* (Linn.).

Found breeding in the open woods near Star Ranch. More common in the woodlots about Marshall.

62. **Blue Jay.** *Cyanocitta cristata cristata* (Linn.).

An abundant—and noisy—breeding species throughout the region, though less common about the lake than elsewhere.

63. **Crow.** *Corvus brachyrhynchos brachyrhynchos* Brehm.

Common breeding species throughout the region.

64. **Cowbird.** *Molothrus ater ater* (Bodd.).

Rather common breeding species, eggs having been found in one case in the nest of the Prothonotary warbler.

65. **Red-winged Blackbird.** *Agelaius phœniceus phœniceus* (Linn.).

Common breeder, though apparently rather local in distribution. Lack of good breeding grounds explains the scarcity to a considerable extent. Nesting on Tow-head Island.

66. **Meadowlark.** *Sturnella magna magna* (Linn.).

Rather common about Marshall, but wanting from the immediate vicinity of the lake. The writer could get no evidence of any subspecies in the vicinity, though he believes it possible that *S. neglecta* may also occur in the region. A breeding species.

67. **Orchard Oriole.** *Icterus spurius* (Linn.).

Seen in numbers about Marshall. At Star Ranch a nest containing eggs was found in a young cypress tree, fully three hundred yards from the nearest shore.

68. **Baltimore Oriole.** *Icterus galbula* (Linn.).

Apparently not common. An old nest was found at the outskirts of Marshall, but no birds were seen.

69. **Bronzed Grackle.** *Quiscalus quiscula æneus* (Ridgw.).

Common about the smaller towns and in the outskirts of Marshall. Not seen at the lake. Breeding in oak trees.

70. **English Sparrow.** *Passer domesticus* (Linn.).

Abundant everywhere about the towns and negro houses.

71. **Lark Sparrow.** *Chondestes grammacus grammacus* (Say.).

Rather common about Marshall, but not seen about the lake. Nest and eggs found near Marshall June 2.

72. **Chipping Sparrow.** *Spizella passerina passerina* (Bechstein).
Several seen at Marshall and Star Ranch, where a nest with young was found. Breeds in high bushes.

73. **Field Sparrow.** *Spizella pusilla pusilla* (Wilson).
In song in the fields about Marshall and near—but not along—the lake; not very common, though breeding.

74. **Cardinal.** *Cardinalis cardinalis cardinalis* (Linn.).
Abundant breeding species throughout the region.

75. **Indigo Bunting.** *Cyanospiza cyanea* (Linn.)
Fairly common throughout the lake region. Nesting on the main land near Eagle Nest Island.

76. **Scarlet Tanager.** *Piranga erythromelas* Vieill.
A single male seen at Marshall June 2; may have been a straggler or late migrant.

77. **Summer Tanager.** *Piranga rubra rubra* (Linn.).
A pair nesting in the woods at Star Ranch is the only evidence at hand of the presence of these birds.

78. **Purple Martin.** *Progne subis subis* (Linn.).
Common breeding species throughout the region. Nests near the lake in houses put out by the negros.

79. **Bank Swallow.** *Riparia riparia* (Linn.).
Several colonies found near Marshall. Common where conditions are favorable.

80. **White-rumped Shrike.** *Lanius ludovicianus excubitorides* Swains.
Three seen near Marshall. Grasshoppers stuck on barbed wire fences gave ample evidence of the presence of these birds.

81. **Red-eyed Vireo.** *Vireosylva olivacea* (Linn.).
Seen only occasionally, but heard constantly at Star Ranch. Nest and young found June 9.

82. **Warbling Vireo.** *Vireosylva gilva gilva* (Vieill.).
Less common than the preceding species, but seen and heard several times at Star Ranch and Baldwin.

83. **White-eyed Vireo.** *Vireo griseus griseus* (Bodd.).
Seen twice at Port Caddo. In song, and probably breeding.

84. **Black and White Warbler.** *Mniotilta varia* (Linn.).
Seen at Baldwin, carrying a caterpillar, but no nest was found.

85. **Prothonotary Warbler** *Protonotaria citrea* (Bodd.).
Abundant in the extreme everywhere about the lake. Nesting in holes in trees and rotten stumps. Three nests containing five eggs were found, though the normal number was but four. Probably several hundred individuals of this glorious warbler were seen or heard.

86. **Parula Warbler.** *Compsothlypis americana usneæ* Brewster.
Common all about the lake, where it was probably nesting, though not nearly as abundant as the Prothonotary warbler.

87. **Pine Warbler.** *Dendroica vigorsi* (Aud.).

Seen several times about Marshall in a good stand of young pines. No sign of its presence in cypress about the lake.

88. **Yellow-breasted Chat.** *Icteria virens virens* (Linn.).

Common breeding species near Marshall and Port Caddo.

89. **Mockingbird.** *Mimus polyglottos polyglottos* (Linn.).

Abundant everywhere except in the immediate vicinity of the lake. First brood of young out of nest before May 28, as young birds out of the nest were frequently seen about Marshall.

90. **Catbird.** *Dumetella carolinensis* (Linn.).

Several seen near Jefferson at the north end of the lake, but there was no evidence of breeding.

91. **Brown Thrasher.** *Toxostoma rufum* (Linn.).

Several seen and heard in full song near Port Caddo and Baldwin, and quite common about Marshall. No breeding evidence.

92. **Carolina Wren.** *Thryothorus ludovicianus ludovicianus* (Lath.).

Seen about Jefferson and Marshall; one specimen at each place.

93. **Bewick's Wren.** *Thryomanes bewicki bewicki* (Aud.).

A single bird of this species from Port Caddo.

94. **White-breasted Nuthatch.** *Sitta carolinensis carolinensis* Lath.

Several seen, both about Marshall and near the lake. Probably more common in the pine woods than in cypress territory.

95. **Tufted Titmouse.** *Bæolophus bicolor* (Linn.).

Not uncommon as a breeding species near Marshall and about the lake. Nesting in holes in dead stubs, and often driving out bluebirds and chickadees which had previous possession.

96. **Plumbeous Chickadee.** *Penthestes carolinensis agilis* Senn.

A common breeding species throughout the region. Nesting near Star Ranch and Port Caddo.

97. **Blue-gray Gnatcatcher.** *Polioptila cærulea cærulea* (Linn.).

Several seen and, near Jefferson, a pair was found working on a nest.

98. **Wood Thrush.** *Hylocichla mustelina* (Gmel.)

Seen only once near Baldwin, but the song was heard repeatedly at points along the lake.

99. **Robin.** *Planesticus migratorius migratorius* (Linn.).

Rare in summer in this region, though occasionally a breeding species. Two old nests were seen at Marshall.

100. **Bluebird.** *Sialia sialis sialis* (Linn.).

A common breeding species about the towns and fields, but not common about the lake. One nest in a cypress, 150 yards from shore.

Department of Biology,
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College Station, Texas.
November 10, 1920.

COMPARATIVE PERIODS OF NESTLING LIFE OF SOME NORTH AMERICAN NIDICOLÆ

BY FRANK L. BURNS

[CONTINUED FROM JUNE ISSUE]

CORVIDÆ:

American Magpie, 22 days (Wheelock, Bds. Calif., 387.)

Blue Jay, 20-21 days (Burns Ms.; Knight, Bds. Me., 387.)

California Jay, 18 days (Bendire, Life Hist., ii, 376.)

Canada Jay, about 15 days (Warren, Auk, xvi, 19.)

American Raven, about 28-30 days (Wheelock, Bds. Calif., 407; Bendire, Life Hist., ii, 399.)

Northern Raven, about 30-35 days (Harlow, Cassinia, xiv, 11; Eifrig, Auk, xxii, 312.)

American Crow, about 28 days (Redfield, Bd.-Lore, xi, 115; Knight, Bds. Me., 335; Redfield Ms.)

California Crow, 25 days (Wheelock, Bds. Calif., 410.)

Fish Crow, about 21 days (Bendire, Life Hist., ii, 418.)

Clark's Nutcracker, about 18 days (Bendire, Ib., 423); 17-21 days (Bradbury, Condor, xix, 150); 28 days (Skinner, Ib., xviii, 64.)

Pinon Jay, 21-22 days (Bendire, Life Hist., ii, 326; Wheelock, Bds. Calif., 495.)

STURNIDÆ:

Starling, at least 15 days (Allen, Bd.-Lore, xiv, 112); 21 to 22 days (Brock, Zoölogist, 1910, 117.)

ICTERIDÆ:

Bobolink, 8 days (Otto, Bd.-Lore, xxi, 179-180); 10-14 days Eaton, Bds. N. Y., 2, 224.)

Cowbird, 10-12 days (Knight, Bds. Me., 343; Ferry Ms.; Abbott, Bd.-Lore, xi, 149; Pierson, Ib., xviii, 128.)

Yellow-headed Blackbird, about 12 days (Roberts, Bd.-Lore, xiv, 252.)

Red-winged Blackbird, 11 and 14 days (Herrick, Home Life of Wild Birds, 12 and 21.)

San Diego Red-winged Blackbird, more than 12 days (Wheelock, Bds. Calif., 480.)

Meadowlark, 10-12 days (Knight, Bds. Me., 349; Wheelock, Nestlings of Forest and Marsh, 25.)

Western Meadowlark, 10-12 days (Saunders, Condor, xvi, 136; Wheelock, Bds. Calif., 513.)

Arizona Hooded Oriole, 14 days (Wheelock, Ib., 519.)

Baltimore Oriole, 15-18 days (Knight, Bds. Me., 353.)

Bullock's Oriole, 15 days (Knight, Bds. Me., 354.)

Rusty Blackbird, 16 days (Bendire, Life Hist., ii, 492); 11 days, flying 13 days (Kinnard, Auk, xxxvii, 421.)

Brewer's Blackbird, 16 days (Bendire, Ib., 496.)

Purple Grackle, 18 days (Bendire, Ib., 499); about 11 or 12 days (Clise, Bd-Lore, xx, 378.)

Bronzed Grackle, about 34 days (Cameron, Auk, xxiv, 401.)

FRINGILLIDÆ:

Evening Grosbeak, more than 16 days (Fleming, Auk, xx, 214.)

Western Evening Grosbeak, 15 days (Wheelock, Bds. Calif., 525.)

Pine Grosbeak, 20 days (Knight, Bds. Me., 368.)

Purple Finch, 14 days (Knight, Ib., 375.)

House Finch, 14 days (Keeler, Zoe, i, 176; Bergtold, Auk, xxx, 58; Osterhout, Ool., xxxv, 57.)

Gray-crowned Rosy Finch, 21 days (Wheelock, Bds. Calif., 211.)

American Goldfinch, 15-16 days (Norton, J.M.O.C., v, 46; Knight, Bds. Me., 388; Bruce, Auk, xv, 243); about 18 days (Beebe, Bd.-Lore, vii, 190.)

California Goldfinch, nearly 21 days (Cookman, Ool., 28.)

Snow Bunting, less than 14 days (Ekblaw, Wils. Bul., 107, 43.)

English Sparrow, 13-16 days (Knight, Bds. Me., 393); about 7 days (Chapman, Bds. E. N. A., rev. ed., 68.)

Redpoll, about 11 days (Dice, Condor, xx, 131.)

Vesper Sparrow, 13-16 days (Knight, Bds. Me., 401); 8 days (Perry, Auk, xxxv, 316.)

Western Vesper Sparrow, 8-10 days (Wheelock, Bds. Calif., 214.)

Savannah Sparrow, 14 days (Knight, Bds. Me., 407.)

Bryant's Sparrow, 10 days (Wheelock, Bds. Calif., 217.)

Lark Sparrow, 10 days (Wheelock, Ib., 222.)

White-throated Sparrow, 14 days (Knight, Bds. Me., 418.)

Chipping Sparrow, 10-12 days (Knight, Ib.; Burns Ms.)

Field Sparrow, 10-11 days (Burns Ms.)

Slate-colored Junco, 12 days (Eliot, Jr., Ms.)

Pink-sided Junco, about 14 days (Skinner, Condor, xxii, 168.)

Song Sparrow, 11 days (Link Ms.; Kuser, Bd.-Lore, xiv, 350.)

Merrill's Song Sparrow, 14 to 16 days (Rust, Condor, xxi, 148.)

Swamp Sparrow, 13 or 14 days (Knight, Bds. Me., 434.)

Towhee, 9 or 10 days (Heil, Bd.-Lore, xi, 158.)

Green-tailed Towhee, 10-12 days (Wheelock, Bds. Calif., 252.)

Cardinal, 8 days (Burns Ms.; Eaton, Auk, xx, 56); 9 days (Harvey, Ib., xx, 56); about 10 days (Steele, Bd.-Lore, xviii, 292.)

Western Blue Grosbeak, more than 10 days (Wheelock, Bds. Calif., 498.)

Rose-breasted Grosbeak, 9 days (Allen, Auk, xxxiii, 53); about 12 days (Davidson, Ib., vi, 191.)

Black-headed Grosbeak, less than 14 days (Wheelock, Bds. Calif., 255.)

Indigo Bunting, 9 days (Cleveland, Bd-Lore, v, 87; Burns Ms.)

Lazuli Bunting, 10 days (Finley, Condor, viii, 10.)

Dickcissel, 9 or 10 days (Gross, Auk, xxxviii, 19.)

TANAGRIDÆ:

Louisiana Tanager, 9 days (Head, Am. Orn., Bd. Mag., 3, 13.)

HIRUNDINDÆ:

Purple Martin, 24-28 days (Jacobs, The Story of a Martin Colony, 15.)

Cliff Swallow, 16 or 17 days (Knight, Bds. Me., 454); about 18 days (Wentworth, Ool., xvi, 66); 21-24 days (Vietor, Bd-Lore, xiv, 152.)

Barn Swallow, 14 days (Wheelock, Bds. Calif., 502; Burns Ms.; Kouwenhoven, Bd.-Lore, xvi, 463.)

Tree Swallow, about 16-17 days (Knight, Bds. Me., 459; Hunt, Bd.-Lore, vi, 93.)

BOMBYCILLIDÆ:

Cedar Waxwing, 12-14 days (Herrick, Pop. Sci. Mo., 77, 28; also Home Life of Wild Birds, 18); 16-18 days (Knight, Bds. Me., 467; Saunders, Auk, xxviii, 327; 12 days (Ferry Ms.)

Phainopepla, 20 days (Myers, Condor, x, 72.)

LANIIDÆ:

Loggerhead Shrike, 14-15 days (McKennon, Ms.)

Migrant Shrike, 18-20 days (Knight, Bds. Me., 472.)

VIRIONIDÆ:

Red-eyed Vireo, 12 days (Burns Ms.); 11-13 days (Herrick, Bd.-Lore, vi, 113; Perkins, Ib., xii, 206; Stephens, Bul. Labr. Nat. Hist. State Uni. Iowa, vii, 3, 25.)

Philadelphia Vireo, 13 days (Lewis, Auk, xxxviii, 192.)

Western Warbling Vireo, 15 days (Rust, Condor, xxii, 94.)

Yellow-throated Vireo, 11 days (Herrick, Home Life of Wild Birds, 69); about 12 or 14 days (Hutchins, Bd.-Lore, iv, 120.)

Hutton's Vireo, 16 days (Van Fleet, Condor, xxi, 164.)

MNIOTILTIDÆ:

Black and White Warbler, 8 days (Stanwood, J. M. O. S., xiii, 63); 10 days (Johnson, Ib., vii, 41); 11 days (Bartsch, Osprey, v, 90); about 11-12 days (Williams, Bd.-Lore, vii, 172.)

Worm-eating Warbler, 10 days (Burns, Wils. Bul., 37, 96, and Bd.-Lore, vii, 139.)

Blue-winged Warbler, 8 days (Burns, in Chapman's Warblers of N. A., 69); 9 days (Wright, Auk, xxvi, 345.)

Brewster's Warbler, 8-9 days (Faxon, Auk, xxxiv, 482, and Memoirs of the Mus. Comp. Zoöl., xl, 2, 60.)

Golden-winged Warbler, 9 days (Crosby, Bd.-Lore, xiv, 146); 10 days (Jacobs, Gleanings, iii, 22.)

Nashville Warbler, 10-11 days (Stanwood, J. M. O. S., xii, 29, also Bluebird, vi, 244; Knight, J. M. O. S., viii, 10, and Bds. Me., 493.)

Yellow Warbler, 9 days (Bigglestone, Wils. Bul., 83, 49); 11-15 days (Knight, Bds. Me., 503.)

Myrtle Warbler, 8 days (Chamberlain quoting Banks, B. N. O. C., viii, 121); 12-14 days (Knight, Bds. Me., 510.

Audubon's Warbler, 14 days (Wheelock, Bds. Calif., 540.)

Magnolia Warbler, 10 days (Stanwood, Auk, xxvii, 389.)

Chestnut-sided Warbler, 10-11 days (Steirle, Ool.) 12 days (Willard, Ool., xxviii, 91.)

Bay-breasted Warbler, 11-12 days (Stanwood, J. M. O. S., xi, 107.)

Black-throated Green Warbler, 10 days (Stanwood, Auk, xxvii, 289.)

Kirtland's Warbler, 12 or 13 days (Wood in Chapman's Warblers of N. A., 207.)

Yellow Palm Warbler, about 12 days (Knight, Bds. Me., 542.)

Prairie Warbler, about 10 days (Daniel, Osprey, v, 118.)

Oven-bird, 8 days (Stanwood, J. M. O. S., xiii, 19); 12 days (Burns Ms.)

Kentucky Warbler, 8 days (Burns in Chapman's Warblers of N. A., 238.)

Mourning Warbler, more than 7 days (Faxon, Auk, vi, 104.)

MacGillivray's Warbler, 9 days (Wyte, Condor, xviii, 123; Wheelock, Bds. Calif., 546.)

Maryland Yellow-throat, 9 or 10 days (Redfield, Bd.-Lore, xiii, 195.)

Yellow-breasted Chat, not more than 11 days (Hitchcock, Bd.-Lore, xiv, 355.)

Long-tailed Chat, more than 8 days (Wheelock, Bds. Calif., 551.)

American Redstart, 12-14 days (Knight, Bds. Me., 575; Kohler, Ool., 27, 128.)

MIMIDÆ:

Mockingbird, 8 days (Finklea and Morris, Bd.-Lore, xv, 308); 9 and 10 days (MacKennon Ms.); 10 days (Daniel, Wils. Bul., 39, 71); 10-12 days (Baldwin, Bd.-Lore, iii, 191.)

Catbird, 9-10 days (Herrick, Home Life, 77 and 79; Verrill, Auk, x, 304); 10 days (Bartsch, Osprey, iv, 149; Shufeldt, Auk, x, 304; Redfield Ms.); about 12 days (Gabrielson, Wils. Bul., 79, 65.)

Brown Thrasher, 10 days (Wheelock, Nestlings Forest and Marsh, 232); 11 days (Gabrielson, Wils. Bul., 79, 85; Ferry Ms.);

10-12 days (Heil, Bd.-Lore, x, 103.)

Curve-billed Thrasher, 12 days (Clark, Auk, xxi, 216.)

California Thrasher, 12-14 days (Wheelock, Bds. Calif., 271.)

Crissal Thrasher, 11-12 days (Wheelock, Ib., 276.)

TROGLODYTIDÆ:

Carolina Wren, at least 10 days (Van Gilluwee, Bd.-Lore, xii, 150.)

Bewick's Wren, 14 days (Wiley Ms.)

House Wren, 14 days (Knight, Bds. Me., 588; Bayles, Auk, xxxiv, 90); 15 days (Burns Ms.); 17 days (Sherman, Wils. Bul., 95, 94.)

Western House Wren 16 days (Wheelock, Bds. Calif., 287.)

Alaska Wren, 22 days (Heath, Condor, xxii, 55.)

Tule Wren, 12 days (Wheelock, Bds., Calif., 292.)

CERTHIIDÆ:

Brown Creeper, 13 or 14 days (Tyler, Auk, xxxi, 50.)

Sierra Creeper, 15 days (Wheelock, Bds. Calif., 296)

SITTIDÆ:

Red-breasted Nuthatch, 14 days (Moore, Ool., 23, 154); more than 14 days (Shaw, Bd.-Lore, xviii, 166.)

Rocky Mountain Nuthatch, more than 11 days (Richards, Condor, x, 194.)

PARIDÆ:

Plain Titmouse, 16 days (Wheelock, Bds. Calif., 350.)

Chickadee, 13-14 days (Knight, Bds. Me., 607; Redfield Ms.; Forbush, Bd.-Lore, xiv, 373); 14-15 days (Stanwood, J. M. O. S., xiii, 28); 18 days (Link Ms.)

Mountain Chickadee, nearly 21 days (Wheelock, Bds. Calif., 353.)

Verdin, 21 days (Wheelock, Ib., 557.)

CHAMAEIDÆ:

Wren-tit, 16 days (Newberry, Condor, xviii, 65.)

SILVIIDÆ:

Ruby-crowned Kinglet, 8 days (Head, Bd.-Lore, v, 53.)

Western Gnatcatcher, at least 9 days (Merriam, Auk, xiii, 124.)

TURDIDÆ:

Wood Thrush, 10 days (Ferry Ms.; Johnson, Osprey, iv, 18); 13 days (Pierson Ms.; Burns Ms.); 14 days (Judson, Bd-Lore, xviii, 213.)

Wilson's Thrush, 10 days (Herrick, Home Life, 12.)

Russet-backed Thrush, about 14 days (Atkinson, Ool., xvi, 180.)

Olive-backed Thrush, 10-12 days (Stanwood, Wils. Bul, 83, 448, and 84, 121.)

Hermit Thrush, 10 days (McClintock, Auk, xxvii, 417); 10-12

days (Stanwood, Wils. Bul., 95, 64, also Bd.-Lore, xii, 103, and Auk, xxvii, 418); 12 days (Perry, Auk, xxxv, 321.)

American Robin, 11-12 days (Herrick, Home Life, 40 and 47); 12 days (Redfield Ms.; Stanwood, Home Progress, 5, 310); 12-13 days (Tyler, Auk, xxx, 395 and 398); 13 days (Gillette, Bd.-Lore, viii, 129; Judson, Ib., xvii, 213); 14 days (Howe, Auk, xv, 165; Chapman, Bds. E. N. A., rev. ed., 68.)

Western Robin, 10-11 days (Saunders, Condor, xvi, 143.)

Bluebird, 15 days (Knight, Bds. Me., 643); 16 days (Hodge, Bd.-Lore, vi, 44; Hubbard, Ib., xi, 66; Boulton, Ib., xviii, 125); 18 days (McKinnon Ms.)

Mountain Bluebird, more than 12 days (Wheelock, Bds. Calif., 508.)

[1] Some twelve years ago, in collaboration with Dr. Lynds Jones, printed forms were circulated among the members of the Wilson Ornithological Club for a coöperative study along certain lines of the nesting habits of our birds and a number of original observations were received by the writer from Dr. G. C. Fisher while at DeFuniak Springs, Fla.; Cold Spring Harbor, Long Island; Butler, Logan and Miami Cos., Ohio; Messrs. T. A. Elliot, Jr., North East Harbor, Maine; J. F. Ferry, Lake Forest, Ill.; H. E. Haughey, Bangs, Ohio; Henry Link, Waterloo, Ind.; R. F. Miller, Frankford, Pa.; Augus McKennon, DeFuniak Springs, Fla.; L. S. Pierson, Valley Forge and Wayne, Pa.; A. C. Redfield, Wayne, Pa., and Barnstable, Mass.; A. C. Read, Isle of Pine, Cuba; C. H. Rogers, Princeton, N. J.; E. W. Vickers, Elsworth, Ohio; Mesdames G. K. Holmes, Summit, N. J.; O. M. Schantz, Morton Park, Ill. and Farida Wiley, Sidney, Ohio; before the project was abandoned. This paper is written in order to keep faith with the observers who contributed some very full reports. I am also indebted to Dr. C. W. Townsend, Messrs, O. E. Baynard, A. B. Howell, G. Willett, and J. H. Gurney (of Norwich, England) for information.

TEN SPRING BIRD LISTS MADE NEAR WASHINGTON, D. C.*

BY W. L. MCATEE

Nearly every year since 1907, Edward A. Preble and the writer, sometimes in company with others, have made at least one trip during the height of migration, on which an effort was made to list as many species of birds as possible. Notes on some of these trips have been mislaid, but those for ten out of the fifteen years, are in presentable condition.

Before reproducing the lists it may be well to state the conditions under which they have been made. Preble and McAtee have consistently followed a definite set of rules in making their bird lists, in which most of their companions on these trips have acquiesced. All birds listed (with the single exception of the whip-poor-will) have been seen, by all members of the party † if possible, and species rare or difficult to identify have been collected. Sub-species have not been considered; these are scarcely a subject for field observation, and moreover, add nothing to a list of bird *species*. Observations have extended from daybreak to dark, and the standard (rarely deviated from) has been a continuous walking trip. Bird lists made under such

* The writer is obliged to E. A. Preble, Alex. Wetmore and W. R. Maxon for reading this paper in part or wholly and making useful suggestions.

† Witmer Stone (The Auk, Vol. 37, No. 3, July 1920, pp. 485-6) has stated that: "The plan practiced by certain careful observers of never recording a bird that both have not seen and satisfactorily identified is excellent. . . . Confirmation of other observers is an excellent feature and the person who always works alone and always sees the largest number of species can not help but arouse a doubt as to whether his enthusiasm has not carried him away." The writer would add that the spirit of competition in making bird lists, and the desire to record the largest number of species, does not appear to be for the best interests of ornithology. The participants in the trips here described have found their greatest satisfaction in searching for the best route in their vicinity for an all-day bird tramp, and in comparing its yield from year to year.

rules are far more comparable for different years and localities, than those in which other means of transportation are used. Skipping about from one faunula or life-zone to another by rapid transit may yield longer lists of species, but it introduces also elements which make for lessened reliability of records and puts standardization, and therefore comparability of lists, out of the question. Withal it is hopeless, whatever the equipment, to see all of the birds present in any region at a given time.

If there is one point more than another in these rules for making a bird list, that the writer would emphasize, it is *seeing* (or in case of doubt, collecting) the birds. Recording species on the basis of calls and songs alone certainly is unsafe. Few have ears keen and practiced enough to discriminate all of the multitude of avian chirpings and carollings and fewer still have an auditory memory reliable enough to name notes heard only a few times each year or perhaps in several seasons.

The risks taken in making sound records may be thoroughly illustrated without seeking examples outside the local avifauna. First we have several couples or other groups of birds that habitually utter one or more very similar notes. Among groups having similar and easily confused call-notes are the brown creeper and the kinglets; tufted titmouse and chickadee; and the robin ("seep" note) and cedarbird. The blue jay has a note that is an almost exact duplicate of the most common utterance of the red-shouldered hawk. Similarities among true songs are marked in the following groups: cardinal, Carolina wren and tufted titmouse; junco, chipping sparrow and pine warbler; purple finch and warbling vireo; and so far as fragmentary or typical songs are concerned the following also must be named: Baltimore oriole and rose-breasted grosbeak; and the redstart, yellow and chestnut-sided warblers.

Then there are the singers of medleys, as the catbird, brown thrasher and mockingbird, detached phrases of whose songs might be mistaken for those of various other species. Finally we have a number of actual, and some-

times very close imitations of notes by various birds. The mockingbird, its name gives evidence, is especially notable in this respect. Two of its common and nearly perfect imitations in this region are the ordinary calls of the bob-white and killdeer. Dr. A. K. Fisher tells of hearing a mocker give in quick succession reproductions of calls or songs of the Carolina wren, tufted titmouse, flicker, robin and meadowlark. The mockingbird's congeners, the brown thrasher and catbird, also, are by no means lacking in imitative ability.

A species noted as a mocker in Europe and which since its introduction has become common here, namely, the starling, has as yet, in the United States, received little recognition for its powers as a mimic. However, it copies notes of the bluebird and wood pewee to perfection. I have on a number of occasions heard the call of the last-named species closely imitated also by the white-eyed vireo.*

Further illustration of the difficulties in identifying notes is to be found in the fact that some birds vocalize in dual roles (this includes all having flight songs), and rarely a species may sing entirely out of character. The grasshopper sparrow, and the Maryland yellow-throat are examples of species each having two utterly different types of songs. On the spring-bird trip of 1921 a song was heard from a bird perched on a wire along an open field with scattered bushes and small trees. The song seemed to be that of Bachman's sparrow, a steady trill followed by three distinct louder notes, and the habitat confirmed the impression. Before a good view was obtained the bird flew down to a small pine, and we cautiously approached, confidently expecting to add this rather rare finch to our list, but to our amazement the bird proved to be an *oven-bird*. It was in an entirely ab-

* Witmer Stone (The Auk, Vol. 38, No. 2, April 1921, p. 290) expressed doubt that such mimicry is very frequent among our birds, but the number of examples cited for one area indicates that for the United States a considerable showing of the phenomenon could be made.

normal environment and we watched it for some time as it repeated a song none of us had ever even dreamed an oven-bird could sing. Cases are on record of redstarts singing so abnormally as to cause collectors to pursue these individuals for a long time and even then find it necessary to collect them to determine the species.

Notes are of the utmost service, of course, in locating birds, and in some cases are a great help in making field identifications, as in the case of red-tailed and red-shouldered hawks, or almost a necessity, as in the case of the fish crow and common crow, and the species of *Empidonax*. Nevertheless, as a policy it is safer and surely it is a much greater pleasure and satisfaction to actually see every species. Finally, to show, by anecdote, the possibilities of blundering, in identifying notes, I may relate an experience of certain members of the Washington Biologists' Field Club. While seated on the porch of their house on Plummers Island, Md., one warm summer evening, they heard a sound from the direction of the canal back of them and distant some 300 yards. Guesses as to the source of the sound by various naturalists in the company, named the following animals: bullfrog, night-heron, and cow. Notes of the tree-toad also have frequently been mistaken for those of the red-bellied woodpecker. Is not the moral obvious? To be sure, see your bird!

The equipment found most useful on the bird trips here described has been 8-power prism binoculars, with a 30-power telescope in reserve for "long-shots," particularly at water-birds. One or more collecting pistols have always been accessible. Concluding the remarks on the manner in which these excursions have been conducted, we present, in tabular form, statements of the route of each trip, names of the observers, and the number of and names of species seen.

1907, May 15. Cleveland Park, Piney Branch, Rock Creek, Chevy Chase Circle, D. C., Glen Echo, Md., Georgetown, D. C., Roslyn and Four-mile Run Hill, Va., E. A. Preble, W. L. McAtee. Number of species seen, 83.

1908, May 14. Piney Branch, Rock Creek, by street car to Benning, by boat Eastern Branch, to Licking Banks, D. C., Bladensburg, Md., then on foot to hills to eastward and return to Benning,

D. C. H. C. Oberholser, W. L. McAtee. Number of species seen, 96.

1909, May 10. About same route as in 1907. E. A. Preble, W. L. McAtee. Number of species seen, 71, my own list only; my notebook states that Preble saw 7 others.

1912, May 9. Mouth of Four-mile Run to Munson Hill and Upton, Va. A. K. Fisher, E. A. Preble, W. L. McAtee. Number of species seen 85.

1913, May 12. Elkins, Mouth of Difficult Run, Mouth of Dead Run, upper Turkey Run, Langley, and Chain Bridge, Va., and D. C., by car to Foxhall Road, thence along Foundry Run to Observatory Heights, D. C. E. A. Preble, W. L. McAtee. Number of species seen 73.

1917, May 17. Mt. Vernon, Dogue Creek, Little Hunting Creek and Dyke, Va. Alex. Wetmore, W. L. McAtee. Number of species seen 95.

1918, May 11. Woodlawn, Dogue Creek, Dyke and New Alexandria, Va. Clarence Shoemaker, Alex Wetmore, W. L. McAtee. Number of species seen 101.

1919, May 13. Woodlawn, Dogue Creek, Little Hunting Creek and Dyke, Va. A. K. Fisher, E. A. Preble, W. L. McAtee. Number of species seen 100.

1920, May 11. Same route as 1919. Alex. Wetmore, E. A. Preble, W. L. McAtee. Number of species seen 98.

1921, May 18. Woodlawn, Dogue Creek, Gum Spring, and Dyke, Va. Remington Kellogg, E. A. Preble, W. L. McAtee. Number of species seen 88.

Commenting on these trips, it is at once apparent that they are sharply marked off in two five-year groups. The average number of species seen on the first five trips was 81.6 and on the second 96.4. The explanation for this striking divergence may well be stated at once, leaving detailed comment to follow. It is that the excursions for the first half of the decade were mainly up-river from Washington, in less varied country, while the last five were distinctly down-river, bringing the observers through not only much territory like that up-stream, but also along the broad expanses and more extensive marshes of the lower river. Naturally, therefore, the most striking difference in the character of the bird lists for the two groups of trips is the greater prevalence of water-birds in the second set. Down the Potomac seems a better place to see also the marsh hawk, bald eagle, osprey, red-bellied woodpecker, bobolink, yellow-throated warbler, mockingbird and marsh wren. The presence of the starling in none of

SPECIES SEEN ON TEN SPRING BIRD TRIPS NEAR WASHINGTON, D. C.

Date of Trip	May 15 1907	May 14 1908	May 10 1909	May 9 1912	May 12 1913	May 17 1917	May 11 1918	May 13 1919	May 11 1920	May 18 1921
Horned grebe								x		
Pied-billed grebe							x			
Herring gull						x				
Bonaparte's gull							x		x	x
Black Tern						x				
American merganser							x			
Mallard							x			
Black duck							x			x
Scaup duck							x			x
Ruddy duck							x			
Bittern										x
Least bittern				x						
Great blue heron		x							x	x
Green heron	x	x				x	x	x	x	x
Black-crowned night heron	x	x	x	x	x		x	x	x	x
Virginia rail							x			
Coot										x
Woodcock			x							
Least sandpiper		x								
Semipalmated sandpiper		x	x			x				
Lesser yellow-legs	x	x	x			x				
Solitary sandpiper	x	x	x			x	x		x	x
Spotted sandpiper	x	x	x	x	x	x	x	x	x	x
Killdeer		x				x	x	x	x	x
Semipalmated plover			x							
Bob-white	x	x	x	x	x	x	x	x	x	x
Mourning dove	x	x		x	x	x	x	x	x	x
Turkey vulture	x	x	x	x	x	x	x	x	x	x
Marsh hawk						x				x
Sharp-shinned hawk	x			x	x	x		x		
Cooper's hawk		x			x		x	x		
Red-tailed hawk				x						
Red-shouldered hawk				x				x	x	
Broad-winged hawk				x						
Bald eagle						x	x	x		x
Sparrow hawk			x							
Osprey			x					x	x	x
Barred owl			x		x				x	
Yellow-billed cuckoo	x	x		x			x	x	x	
Black-billed cuckoo				x						
Kingfisher	x	x	x	x		x	x	x	x	x
Hairy woodpecker				x	x	x		x	x	
Downy woodpecker	x	x		x	x	x		x	x	x
Yellow-bellied sapsucker						x		x		
Red-headed woodpecker	x	x	x		x	x		x	x	
Red-bellied woodpecker								x	x	
Flicker	x	x	x	x	x	x	x	x	x	x
Whippoorwill				x			x			
Nighthawk		x		x		x			x	x
Chimney swift	x	x	x	x	x	x	x	x	x	x
Hummingbird	x	x		x	x		x	x	x	x
Kingbird	x	x	x	x	x	x	x	x	x	x
Crested flycatcher	x	x	x	x	x	x	x	x	x	x
Phoebe	x	x	x	x	x	x	x	x	x	x
Olive-sided flycatcher				x						
Wood pewee	x	x	x	x	x	x	x	x	x	x
Acadian flycatcher		x		x		x	x		x	
Least flycatcher		x		x			x		x	x
Blue jay	x	x	x	x	x	x	x	x	x	x
Crow	x	x	x	x	x	x	x	x	x	x
Fish crow	x	x	x	x	x	x	x	x	x	x
Starling						x	x	x	x	x
Bobolink	x	x				x		x	x	x
Cowbird	x	x						x		
Red-winged blackbird	x	x	x			x	x	x	x	x
Meadowlark	x	x	x	x	x	x	x	x	x	x
Orchard oriole	x	x	x	x	x	x	x	x	x	x
Baltimore oriole	x	x	x	x		x	x	x	x	x
Purple grackle	x	x	x	x	x	x	x	x	x	x
Purple finch		x								
English Sparrow	x	x	x	x	x	x	x	x	x	x

Date of Trip	May 15 1907	May 14 1908	01 Apr 1909	May 9 1912	May 12 1913	May 17 1917	May 11 1918	May 13 1919	May 11 1920	May 18 1921
Goldfinch	x	x	x	x	x	x	x	x	x	x
Vesper sparrow									x	
Savannah sparrow							x	x		
Grasshopper sparrow	x			x	x	x	x	x	x	x
Henslow's sparrow						x	x	x	x	x
White-crowned sparrow						x		x	x	
White-throated sparrow	x			x	x	x	x	x	x	
Chipping sparrow	x	x	x	x	x	x	x	x	x	x
Field sparrow	x	x	x	x	x	x	x	x	x	x
Song sparrow	x	x	x	x	x	x	x	x	x	x
Swamp sparrow		x		x			x	x	x	
Chewink	x	x	x	x	x	x	x	x	x	x
Cardinal	x	x	x	x	x	x	x	x	x	x
Rose-breasted grosbeak	x	x			x	x	x	x	x	x
Blue grosbeak	x									
Indigo bunting	x	x	x	x	x	x	x	x	x	x
Scarlet tanager	x	x	x	x	x	x	x	x	x	x
Summer tanager	x								x	
Purple martin		x		x		x	x	x	x	x
Cliff swallow						x				
Barn swallow	x	x	x	x	x	x	x	x	x	x
Tree swallow			x	x		x	x			x
Bank swallow		x	x	x	x		x	x		x
Rough-winged swallow	x	x	x	x	x	x	x	x	x	x
Cedar waxwing	x					x			x	x
Migrant shrike					x	x		x		
Red-eyed vireo	x	x	x	x	x	x	x	x	x	x
Yellow-throated Vireo	x	x	x	x	x	x	x	x	x	x
White-eyed Vireo	x	x	x	x	x	x	x	x	x	x
Black and white warbler	x	x	x	x	x	x	x	x	x	
Worm-eating warbler	x	x	x		x		x	x	x	
Blue-winged warbler		x				x		x	x	
Golden-winged warbler				x				x		
Parula Warbler	x	x	x	x	x	x	x	x	x	x
Cape May Warbler		x			x	x	x	x		x
Yellow warbler	x	x	x		x	x	x	x	x	x
Black-throated blue warbler	x	x	x	x	x	x	x	x		x
Myrtle warbler	x	x	x	x	x	x	x	x	x	x
Magnolia warbler	x	x		x	x	x	x	x	x	
Chestnut-sided warbler		x	x	x	x	x	x	x	x	
Bay-breasted warbler		x	x	x	x	x	x	x	x	x
Black-poll warbler	x	x	x	x	x		x	x	x	x
Blackburnian warbler		x					x	x		
Yellow-throated warbler		x				x	x		x	
Black-throated green warbler	x	x	x			x	x	x	x	x
Pine warbler		x				x	x	x		
Prairie warbler	x	x		x	x	x	x	x	x	
Oven-bird	x	x	x	x	x	x	x	x	x	x
Water-thrush	x	x								
Louisiana water thrush	x	x		x	x		x		x	
Kentucky warbler	x	x	x		x		x		x	x
Mourning warbler				x						
Maryland yellow-throat	x	x	x	x	x	x	x	x	x	x
Yellow-breasted chat	x	x		x	x	x	x	x	x	x
Hooded warbler		x			x	x	x	x	x	x
Wilson's warbler	x	x		x			x	x	x	
Canada warbler	x	x	x	x		x	x	x		x
Redstart	x	x	x	x	x	x	x	x	x	x
Mockingbird				x	x	x	x	x	x	x
Catbird	x	x	x	x	x	x	x	x	x	x
Brown thrasher	x	x	x	x	x	x	x	x	x	x
Carolina wren	x	x	x	x	x	x	x	x	x	x
House wren	x	x	x	x	x	x	x	x	x	x
Long-billed marsh wren	x	x	x			x	x	x	x	x
White-breasted nuthatch	x		x				x			
Tufted titmouse	x	x	x	x	x	x	x	x	x	x
Carolina chickadee	x	x	x	x	x	x	x	x	x	x
Ruby-crowned kinglet						x				
Blue-gray gnatcatcher		x		x		x	x	x	x	x
Wood thrush	x	x	x	x	x	x	x	x	x	x
Wilson's thrush	x	x		x				x	x	x
Gray-cheeked thrush	x	x								
Olive-backed thrush	x	x	x	x	x	x	x	x	x	x
Robin	x	x	x	x	x	x	x	x	x	x
Bluebird	x	x	x	x	x	x	x	x	x	x
Total Species Seen	83	96	71	85	73	95	101	100	98	88

the first but in all of the second five lists is a phenomenon of time rather than of locality. The up-stream country seems to have hardly a point (other than that already mentioned) of superiority over the lower, although from general experience it may be said that at least the worm-eating warbler is more often seen there.

Of the birds seen on only one of the ten trips, it may be said that the grebes and ducks, the coot and strictly migrant shorebirds are of decidedly irregular occurrence at the season in point; the bitterns are elusive; and the woodcock and hawks locally restricted species in this their breeding season; the black-billed cuckoo, vesper sparrow and blue grosbeak are not only local but rare breeders; the purple finch and ruby-crowned kinglet are near the end of their spring stay; and the mourning warbler is a rare migrant, one certainly not apt to be seen more than once in ten trips.

As to species not seen, but which reasonably might have been expected, the following may be mentioned: ring-billed gull, wood duck, ruffed grouse, screech owl, great horned owl, yellow-bellied flycatcher, warbling vireo, and the Tennessee warbler. In addition to these the red crossbill, siskin, junco, Bachman's sparrow, Lincoln's sparrow, solitary vireo, yellow palm warbler and red-breasted nuthatch certainly are possibilities. The composite list of birds actually seen on the ten trips is 146 species; 8 probabilities and 9 possibilities (great rarities absolutely excluded)have just been mentioned, so it may be seen that on a day in the very height of migration in a good year, with all luck attending, an exceedingly good bird list might be compiled.

But luck in all directions never does occur simultaneously. At the end of a long day's tramp it generally is true that some more or less common birds have not been seen; the list is poor in woodpeckers, or hawks or waterbirds, or thrushes; conditions are seldom right for all groups of birds on one day. Some fairly common species even are elusive, especially those breeding at this season. Pairs are scattered here and there at their nesting sites, and one must actually enter their domain to find them.

Examples are the hawks, Henslow's sparrow, the butcher-bird and the white-breasted nuthatch. However, the localizing of birds has its advantages when the observers have become well acquainted with the country. They are able to call upon certain birds, as it were, and the regularity with which representatives of the species are found in a given area, year after year, is remarkable.

In the earlier years, it was by no means the easiest thing in the world, to get a robin or crow blackbird on the list of birds seen. But since that time these species have become decidedly more common; other breeding birds which have shared this tendency to a greater or less degree, are: the orchard oriole, migrant shrike, and mocking-bird. Among strict migrants the Cape May and Tennessee warblers have been seen more frequently in recent seasons than they were ten to fifteen years ago. The European starling has been steadily increasing in numbers since its first appearance in our region in 1913. Decrease in numbers within the period of the lists here presented, can hardly be ascribed to any species except the English sparrow; although in a period of about twice as long, hawks and owls in general are known to have become much scarcer.

Consideration of the bird lists here presented brings up the question among others as to what evidence they give as to the height of migration in the District of Columbia region. The ten annual excursions here cited represent every date from May 9 to 18 except the 16th. The days on which more than the average number of species were seen were 11, 11, 13, 14 and 17. The longest two lists were obtained on 11 and 13. These data confirm the usual impression among bird students here that the height of migration is apt to occur from May 10 to 15.

The peak of migration then occurs at a period when some of the later migrants normally are just beginning to arrive, as the least bittern, yellow-bellied and alder flycatchers, Connecticut and mourning warblers and the gray-cheeked thrush. In the average season, therefore, most of these species are not likely to be seen on a trip taken during the actual height of migration. If the date is post-

poned until these birds are in full migration numerous earlier migrants will have passed through or will be represented merely by stragglers. Occasionally migration is delayed in such a way that ordinary migrants are here in numbers at the same time as the later ones. Theoretically, such conditions afford the greatest opportunity for a long bird list. The writer has made only one trip at such a time, and not realizing the opportunity in advance, the route taken was entirely in one type of country where there was little chance of seeing marsh and aquatic birds. This was on the 30th of May, 1917 (valley of Patuxent, above Laurel, Md., in company with Alex. Wetmore and Douglas C. Mabbott) and 73 species of birds were seen. Among them were four species not recorded in any of the lists here discussed, namely, Lincoln's sparrow, the Tennessee warbler, Philadelphia vireo, and yellow-bellied flycatcher. The last-named was actually common. 17 individuals being seen. On the annual spring excursions here analyzed only one mourning warbler had been observed, but on this day we saw six. Specimens of this species, the yellow-bellied flycatcher and Philadelphia vireo were collected. A very good list (20 species) of warblers was made, the records being very late for the Cape May, black-throated blue, myrtle, magnolia, chestnut-sided, bay-breasted, and Canada warblers, and the olive-backed and and gray-cheeked thrushes. Taking advantage of the revelations of this day various observers made bird trips in the next few days, with the result that the year 1917 furnished a larger number of latest dates for migrants than any other. With a delayed (and therefore condensed) migration realized, an all-day trip made over the best route in the region should give most gratifying results. What an opportunity there was, for instance, during the "tidal wave" of birds as described by Cones and Prentiss * for the second and third weeks of May, 1882, when even the trees in the city parks and streets were swarming with warblers and other brightly colored migrants. If such a phenomenon occurs again let us hope that Washington observers make the most of it.

* Avifauna Columbiana, 1883, pp. 31-32.

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EDITORIAL

Your editor wishes to stress the importance of the Annual Meeting, which is to be held, this year, on December 26th and 27th at the Field Columbian Museum, in Chicago. Matters of policy of the utmost importance to every member will be discussed, upon which decisions must be made. Your participation in the discussions and your vote in the final action to be taken are urgently needed. The program of papers and discussions of them will be well worth your while, and the opportunity to meet others who are working and thinking along the lines of your activities will be an inspiration and a help for the months that follow. If you cannot be present on the 26th come on the 27th. It is likely that the meetings will run over to the 28th.

Bird banding as a means of determining the movements of birds has been practiced for many years, but not until Mr. S. Prentiss Baldwin, of Cleveland, Ohio, opened the field by combining banding with systematic trapping, had the results obtained anywhere near paid for the outlay in money and time. Mr. Baldwin's results clearly show that here is a means within the reach of any persons who can secure a permit to trap birds for this purpose, and who have sufficient knowledge of bird species to handle them intelligently, of adding facts of the greatest importance to our knowledge of the movements of the birds, and also to shed great light upon the breeding habits of such birds as permit handling during their breeding activities. Since the method approaches exactness it is far superior to bird watching in revealing certain habits which are connected with the breeding activities. While any one person will be able to learn many things worth while there are many other things that can be learned only by coöperation over a wide area. The U. S. Biological Survey furnishes the bands and the instructions that are necessary for the work, and is the clearing house to which all records are sent, both bands placed and bands found upon birds that have been caught. If you are interested in this line of work you would do well to write to the Chief of the Biological Survey, Washington, D. C., for information, which will be sent to you promptly.

FIELD NOTES

THE ROADSIDE CENSUS IN MASSACHUSETTS

In western Massachusetts we found roadside censuses were not as easy to take as in Oklahoma; first, because of the good roads, automobiling is apt to be too rapid for bird identification; second, the birds are less in evidence since they are not largely dependent on fence and telephone wires for perches; and, lastly, there are various kinds of sparrows and swallows that cannot readily be distinguished. Nevertheless, the results of ten censuses — 154 miles — taken in Hampshire, Hampden and Franklin counties between June 7 and July 13, 1921, are interesting for comparison with our findings in Oklahoma.*

As to the kinds of birds, Kingbirds, Bluebirds and Cliff Swallows were almost the only native birds seen in both States; the former averaged nearly the same number of individuals seen per census in both localities — 3.8 in Oklahoma and 3.3 in Massachusetts, — but Bluebirds were much less common in the East, averaging only 1.6 per census in contrast to the 6.5 in the West. (As the 1920 censuses average 20 miles apiece and those in 1921 15 the advantage of Oklahoma is even greater than first appears). It was a relief to find English Sparrows comprising only 11 per cent of the total number of birds seen, instead of 28. Robins were by far the most abundant bird recorded, 28 per cent of the 587 native birds belonging to this species.

In regard to the number of birds seen per mile, the average for all censuses was lower in Massachusetts than in Oklahoma— 3.8 in contrast to 4.8; and when we consider that all the eastern censuses were taken in pleasant weather, and compare this 3.8 with the 5.2 in Oklahoma, we have fewer birds than ever. However these censuses are not directly comparable, for in Massachusetts two-thirds of them were taken in the heat of the day and in Oklahoma only three-sevenths occurred at this period. The censuses in the cool of the day are astonishingly alike in both States: 6.1 birds per mile in Massachusetts and 6.2 in Oklahoma. But the five counts taken during the heat of the day — 101 miles — show somewhat fewer birds in the East: 2.6 in comparison to 3.9 in the West. (The maximum temperature ranged from 79° on three days to 88° on one day and 93° on another, which was less, of course, than the average maxima on the Oklahoma censuses of 90° to 95°, not to mention the exceptional one of 99°). It may be that New England birds dislike excessive heat more than the prairie birds do, or it may simply be that fewer were seen because of the greater accessibility of cover in this region.

* Nice, M. M. & Nice, L. B. This Journal. XXXIII, 3. 1921. p. 113–123.

Three later censuses — 42 miles — from August 3 to 9, gave an average of 8 birds per mile; in these the effect of the flocking of Cliff and Barn Swallows is seen, for more than half of the native birds recorded — 125 out of 330 — belonged to these species.

This further experience has convinced us that the chief value of the roadside census for comparative purposes lies during the breeding season, partly because birds are easier to identify then, but largely because of the stability of the avian population.

Norman, Okla. MARGARET M. NICE and L. B. NICE.

SPRAGUE'S PIPIT—*ANTHUS SPRAGUEI*—IN FLORIDA

On February 23rd, 1921, while investigating a colony of Florida Burrowing Owl (*Speotyto floridana floridana*) in De Sota County —now Charlotte County — about eight miles northwest of Punta Gorda, I noticed two small birds fly up from the very open, sandy "prairie" and go off quite wild in rather erratic flight. A general grayish color and decidedly white on the outer tail feathers indicated a stranger to me. One of the birds went off entirely out of sight *eastward* while the other lit on the summit of an excavation on the border of a large drainage canal and was there shot and later found to be a female in normal winter plumage.

So far as I can determine this is the first record for this bird in Florida.

On March 7th, following, while crossing the same "prairie" about one and one-half miles farther east another bird of this species was observed and twice flushed at long range and finally disappeared. I judged it might be the number two bird seen February 23rd.

C. J. PENNOCK,

Kennett Square, Pa.

WILD BIRDS AND GAME FOWL ARE INCREASING

Notable increases in migratory birds, through special protection afforded them under Federal laws, are reported by George A. Lawyer, Chief U. S. Game Warden of the Bureau of Biological Survey, United States Department of Agriculture, as a feature of his recent inspection of the various districts scattered throughout the country. Mr. Lawyer's trip took him practically around the borders and coasts of the entire country, giving him opportunity to observe the condition of the birds in all important wintering sections of the United States.

Wild ducks and geese were found in great abundance, showing the most notable increase of any of the migratory birds. Greater numbers of upland plover, sandhill cranes, and Wilson snipe or jacksnipe, were also especially noted. The welfare of the birds was found to be generally satisfactory and promising, although the

draining of marsh lands in many places has driven them from some of their old feeding and breeding haunts.

Greater need is evidenced for the Government purchase and maintenance of large tracts of marsh lands, where the birds would be secure from molestation. Such natural asylums, it is said, are becoming fewer and consequently are affording less protection each year, due chiefly to the large areas being reclaimed for commercial purposes. The birds are quick to discover when they are in places where they are safe from hunters.

NOTES ON SOME FLYCATCHERS OBSERVED NEAR MINDEN, NEBRASKA

After reading the article on the distribution and migration of the flycatchers of Nebraska in the September, 1921, number of the Wilson Bulletin, it seems desirable to place on record the fact that in company with two other observers I noted a scissor-tailed flycatcher here at Minden, Kearney County, in the spring of 1917. I also found the crested flycatcher here in the spring of 1919, and the least flycatcher is a common migrant here both in the spring and fall. The fall migration this year is much less than I have observed it to be for many years. Mr. Mortenson and myself saw a mockingbird October 28, 1921, which is much later than I have known one to be here before.—H. Hapeman, Minden, Nebraska.

AN UNUSUAL EASTWARD MOVEMENT OF THE MAGPIE IN NEBRASKA

Ordinarily the magpie does not move eastward in the fall beyond the 100th meridians, except along the northern border of Nebraska, and records of its occurrence east of the 98th meridian are few, usually not more than once every few years. The present fall of 1921, however, has brought these birds in unusual numbers into eastern, and even southeastern Nebraska. The first report of the occurrence of the magpie in southeastern Nebraska this year came from the rather heavily wooded Salt Creek bottoms in southern Lancaster County, south of Lincoln, during the first week in October. Numerous Lincoln observers reported the magpie from that region during October, usually but one bird seen, except that Mrs. George O. Smith noted two birds on October 9. The last date on which the magpie was noted in that region was on October 23, when one bird was seen by Mr. N. F. Peterson. On October 11 the magpie was noted by Mrs. John Loder on her farm near Waverly in northeastern Lancaster County, and the bird was present there until at least October 30, when it was last noted. On October 23 Mr. L. W. Dawson of Lincoln, saw three magpies near Weeping Water, Cass County, within a few miles of the Missouri river. About October 29 a flock of five magpies

appeared near Fairbury, Jefferson County, making their headquarters about a slaughter house and refuse dump two miles from town, and were still there on November 12, on the authority of Mrs. H. F. Hole of Fairbury. No doubt there are other records from other localities in southeastern Nebraska that have not come to our attention, but the above is sufficient to indicate a movement of magpies into southeastern Nebraska greater than has taken place for at least the past twenty-five years, during the present fall.—Myron H. Swenk and Ralph W. Dawson, Lincoln, Nebraska.

BIRD COLLECTIONS OF THE MILWAUKEE MUSEUM

Many bird lovers and ornithologists of the middle west are perhaps unaware that the Public Museum of the city of Milwaukee has one of the finest exhibition collections of birds to be seen in this country.

The excellence of the Taxidermy and attractive installation, particularly of the North American collection, is largely due to the efforts of Mr. George Shrosbree, for twenty-two years Chief Taxidermist of the institution. All specimens in the systematic collections are on limbs, twigs, artificial rockwork, etc., attached directly to the backs of cases, doing away with the unsightly rows of polished stands and bases.

The North American systematic collection contains about 1370 specimens, representing 720 species and sub-species. Over forty small groups of Wisconsin birds with nestlings are shown and two especially attractive large groups. A unique feature of the collection is the large number of very young, unfledged nestlings shown. There are a number of other birds groups, both foreign and North American. The foreign systematic collection contains about 1300 mounted specimens.

"Milwaukee Region" collections containing 210 species of birds that regularly visit the locality, is especially interesting to local students. A bird's position in the case indicates whether it is north of, south of, or in the area, the specimens being changed frequently during the migrations.

The oologist will be delighted with the fine R. F. Goss collection of North American bird eggs containing, among many other rarities, the eggs of the Trumpeter Swan.

A beautifully prepared Pigeon Exhibit shows thirty-four of the more striking domestic breeds and the Rock Pigeon from which they were derived. Bird skeletons, a synoptic collection, and the study skins are there for those who desire to use them.

Plans have been made for, and considerable preliminary work already done on a series of large North American bird groups to be constructed in the near future.

Milwaukee, Wis. HERBERT L. STODDARD.

BURROWING OWL LAYS EGG IN CAPTIVITY

Last season, on April 20th, 1920, while digging out a burrowing owl hole in a wheat field in Benicia I captured the female owl in the nest cavity. One egg had been laid in the enlarged chamber, six feet from the entrance, with no nest except dried horse dung, which carpeted the burrow from the entrance. I took the owl home and improvised a cage for her. On the morning of the second day after her capture, when we arose in the morning, we found an egg on the board floor of the box in which we had confined her. I thought she might lay some more as this was but her second one, and one's natural impression would be that eggs in process of formation would necessarily have to develop and be deposited; however, birds apparently have remarkable control over this function, as, for instance, is evidenced by the fact that a complete new set of eggs can be brought into existence within a comparatively few days after the destruction of a previous set. It also appears that they can stop laying if they so desire, and this she did, as, although I kept her five days longer, she would lay no more. As I had no access to mice or other rodents I shot some sparrows, one or two a day, though no doubt she could have taken care of more. These she ate entirely, leaving no sign of flesh, feathers, or claws, though she would not eat if she was aware that anyone was watching her. When anyone appeared suddenly in front of her cage she would assume an attitude of willingness to take either offensive or defensive, at the same time uttering a long scream and glaring at the intruder until she got accustomed to his presence, then she would settle down, continuing to glare at him. If our cat showed himself there was a continual screaming until the animal disappeared. After our interesting little visitor had spent her seventh day with us we took her back to the same field and released her.

Benicia, Solano County, Calif. EMERSON A. STONER.

THE CHICAGO ORNITHOLOGICAL SOCIETY

Dr. R. M. Strong, with twenty-two students of ornithology in the University of Chicago, founded the Chicago Ornithological Society in December, 1912. The purpose of the Society being to stimulate interest in the study of Bird Life, especially our local birds, by the collection of data and comparison of field notes on the birds of the Chicago area.

The meetings were at first held in the buildings of the University, but as the membership of the Society grew, with members residing in all parts of the city, a central meeting place became desirable, and since 1915 the Society has held monthly meetings in the Loop District. A number of our members were kind enough to tender the use of their downtown offices for this purpose and those of us who have attended these meetings during

the past five years will recall many pleasant and profitable evenings, when we gathered in the reception room of Dr. Groenewoud or Dr. Test or Dr. Lewy. For over a year past the meetings were held in the rooms of the Cook County Forest Preserve in the County Building, then the Crerar Library gave the use of the Class Room in their new building at Michigan Boulevard and Randolph Street, where meetings have been held since March, 1921.

From a small beginning, with but a handful in attendance, the Society has grown until today the meetings are well attended. It has encouraged the scientific side of ornithology and has gathered together a group of students who are doing valuable work and who obtain both instruction and enjoyment in the informal Round Table talks, when notes and experiences are read, compared and discussed. One or two field trips are held each year. A committee has under its care the recording of migration and nesting data of the birds of the Chicago area. Some members travel about over the country and return with a message for us on the birds of distant States, while stay-at-home members bring us the message gleaned from an intimate study of one or more of our own local birds. But after all it is the enthusiasm, mutual help and good fellowship these meetings inspire that assures the Chicago Ornithological Society a bright and lasting future.

Chicago, Ill. Chreswell J. Hunt.

NOTES HERE AND THERE

Conducted by the Secretary

Dr. T. C. Stephens of Sioux City, spent a goodly part of the summer preparing data and manuscript on the summer birds of the Lake Okoboji region in Iowa.

Perhaps the finest ornithoolgical library in the middle west is that of the Crerar Library in Chicago. In addition to the splendid collection of books, here may also be found complete files of most of the bird magazines of consequence which have been published in this and other countries. The Library has recently removed to permanent quarters in the Marshall Field Building on Wabash avenue.

Dr. Wilfred H. Osgood is now Curator of Zoölogy at the Field Museum of Natural History, Chicago. Dr. Osgood will take over the ornithoolgical work of the late Dr. Charles B Cory of that institution.

Prof. Thos. L. Hankinson, one of our former Secretaries, has accepted the chair of Biology at the State Normal School at Ypsilanti, Mich. Professor Hankinson had been with the New York School of Forestry at Syracuse.

Some years ago, when the present Secretary took up his new duties, friend Bales of Circleville, Ohio, wrote him that "the Club has a lot of mighty fine fellows in it." The truth of this remark has become more and more apparent as time goes on and the writer would amplify it only to include the ladies.

Mr. George M. Sutton of the Carnegie Museum in Pittsburg, is preparing the colored plates for H. H. Bailey's forthcoming book on the birds of Florida. Mr. Sutton's work has attracted well deserved attention and he birds fair to rank high among our bird artists.

A method of securing copies of pages from rare books, or of illustrations, manuscripts, etc., is afforded by the use of the Photostat, with which most of our larger libraries are now equipped. To ornithologists, engaged in research work or in getting together literature pertaining to any particular area, this photographic process permits securing facsimile copies of the originals and at a smaller cost than for typewritten copies. The New York Public lic Library filled over 5,000 orders during 1920 at a cost of about 13 cents per page. The Crerar Library of Chicago and the Chicago Public Library are among the western institutions which render Photostatic or similar service.

Mr. C. J. Pennock of Kennett Square, Pa., with whose Florida writings our readers are quite familiar, is spending the winter again in southwestern Florida, at Punta Gordo.

The splendid oological collection of the late John Lewis Childs of Floral Park, N. Y., is being disposed of to the public. Half "Lattin's rates" is said to apply throughout

Dr. and Mrs. George R. Mayfield of Nashville, spent the month of September in and about Chicago, getting acquainted with the birds of that area. Dr. Mayfield's specialty is the call notes and songs of the warblers.

The John Burroughs Memorial Association has been launched for the purpose of acquiring and maintaining, for permanent memorials to the famous author, the properties upon which he spent most of the eighty-four years of his life.

Mr. Richard C. Harlow of State College, Pa., spent six interesting weeks in southern Canada the past summer. He reports good success in collecting, including the finding of some nice sets of the rarer warblers.

By proclamation, the governor of Kentucky has recently set aside "The Old Kentucky Home," at Barstown, Ky., as a permanent sanctuary for bird life. It is a finely wooded tract in which is situated the old colonial mansion in which was written the famous song, "My Old Kentucky Home."

Mr. Herbert L. Stoddard of the Milwaukee Museum, did some intensive field work and collecting in southern Wisconsin during May and June last. A vacation, which came in December, found Mr. Stoddard back in his old tramping grounds among the Indiana Land Dunes of Lake Michigan, where he has made many valuable records in the past.

In mailing out the usual annual circular letter it has been found that, largely due to the good work of our membership teams, the Club membership now lacks but a few names of reaching the 600 mark. The distribution, by states, territories, etc., is as follows: Ala. 2, Alaska 1, Ark. 1, Calif. 19, Canada 14, Colo. 6. Conn. 9, Cuba 2, Del 1, Dist. of Col. 17, Fla. 6, Georgia 7, Idaho 1, Ill. 70, Ind. 21, Iowa 51, Kans. 5, Kentucky 8, La. 6, Maine 3, Mass. 18, Md. 6, Mich. 16, Minn. 9, Miss. 3, Mo. 18, Nebr. (Nebr. Orn. Union) 53, N. Ver. 14, N. York 31, N. Car. 1, N. Dak. 3, Ohio 69, Okla. 2, Ore. 5, Penna. 18, Porto Rico 1, P. I. 1, R. Island 3, S. Car. 3, S. Dak. 7, Tenn. 18, Porto Rico 1, P. I. 1, R. Island 3, S. Car. 3, Wis. 21, Foreign 5. The Bulletin also has a list of subscribers which includes most of the important libraries and museums in the country.

The Secretary is interested in keeping our mailing list correct in every way. If your name is misspelled, or your address incomplete, write him promptly regarding it.

One of the finest collections of Japanese and Oriental bird skins

in this country is that of Mr. Henry K. Coale of Highland Park, Ill. Mr Coale has for years enjoyed the friendship and exchange agreements with some of Japan's best ornithologists. In looking over a part of this collection, the writer noted the firmness of the filling used in these skins and also the brown paper band circling each bird at the breast. The latter one he has put into practice in his own collection and finds it most effective in keeping the wings of large birds close against the body.

The annual meeting of the Wilson Club will be held at Chicago on December 26th and 27th, a circular letter to this effect having been recently sent to all members. We have been accorded the privilege of meeting in the new Field Museum of Natural History and the opening session of the first day has been set at 10 a. m. A committee of our Chicago members have our program in hand and a pleasant and profitable time may be expected. Many matters of importance will be brought up and a large attendance is desired.

The matter of enlarging and improving The Wilson Bulletin will be finally disposed of at the coming meeting. A year ago we stepped up from 32 pages to 48, with illustrations. The expansion has proven entirely inadequate to the care of the meritorious material offered for publication and it is desired that we print 64 pages per issue. Associate members have received for their dollar dues, a book of 200 pages, filled with articles of importance and current items of interest. This may be properly compared with current scientific books of limited circulation, for which a price of five dollars and more is being asked. All dues go into printing and postage; the considerable amount of time devoted to the work by the officers is done gratuitously and with pleasure, for the advancement of ornithology.

PUBLICATIONS REVIEWED

LIFE HISTORIES OF N. A. GULLS AND TERNS

BY A. C. BENT

The same painstaking care exercised in the preparation of the volume on the Alcidae by the same author is evident in this volume too. If one has Ridgway's Birds of North and Middle America for the purely technical matter and Bent's Life Histories in his library he has indeed all that is necessary to gain a complete knowledge of N. A. birds.

We are glad that the author is courageous and independent enough to voice his own personal opinions, whenever they differ from those of the A. O. U. Committee, based of course on weighty evidence and accurate comparison. Such cases for instance are his treatment of Larus vegae, which certainly is not a good species, perhaps not even a sub-species, of Larus nelsoni and Larus barrovianus. We have stated elsewhere years ago that the question is not always whether some of these alleged differences exist but *whether they are worthy of recognition in nomenclature.* Mr. Bent's views on the status of Larus brachyrhynchus have proven true, as the species has subsequently been shown to be only subspecifically distinct from Larus canus. His remarks on Catharacta chilensis and Larus fuscus affiuis are likewise sound.

The photos are fine — the only disappointing one being that of the nest of the Ivory Gull, but perhaps it was the only one to be had. The colored plates are excellent. Altogether Mr. Bent's work is a mine of information and "a joy forever." He richly deserves the gratitude of all working ornithologists and more liberal treatment at the hands of the government in the way of paper stock and cover. W. F. H.

BIRD BANDING BY MEANS OF SYSTEMATIC TRAPPING *

BY S. PRENTISS BALDWIN

Until Mr. Baldwin made his first report of progress at one of the A. O. U meetings upon the work that he was doing in trapping and banding, some of us were becoming skeptical about whether the small returns from bird banding as it had been practiced up to that time was worth the cost in time and money. But here was a method which brought results. It opened a field for research which promised large returns, even if pursued independently, but pursued in coöperation with others promised results of inestimable value in the study not only of migration but also of features of the life history of the birds. Mr. Baldwin's banding operations occupied the summer and autumn months at Gates Mill, Ohio, and the late winter months at Thomasville, Georgia, for the years 1914 to 1918; but he is continuing this work at both places since this report was published. The writer has had

the pleasure of visiting the scene of operation at Gates Mill, Ohio, and studying with Mr. Baldwin the actual operations. There is no secret about it. Now that Mr. Baldwin has pointed the way anyone with a fair knowledge of the bird species and an interest in the work sufficient to continue it even when it may cause some inconvenience, can do it and obtain fascinating results. Even one trap is worth operating, but two or three will bring more results. The traps are not expensive, and they will last your lifetime if they are given reasonable care. The writer would like to have north and south lines of bird banders established across Ohio. One natural route would be the Cuyahoga and Muskingum rivers line, another the Sandusky-Scioto rivers line, and still another the Maumee-Miami rivers line. Then there ought also to be lines between these so that any lateral movements could be detected. It is probably true that the largest returns would be wholly local, but there would probably also be satisfactory returns from other trapping and band operations in each line. Any persons who are interested in this kind of work will find Mr. Baldwin entirely willing to give such advice and directions as will help the campaign along. Write him at the Williamson Building, Cleveland, Ohio. L. J.

*Abstract of the Proceedings of the Lincoln Society of New York. For the year ending March 11, 1919. No. 31, 1918-1919. Issued Dec. 23, 1919.

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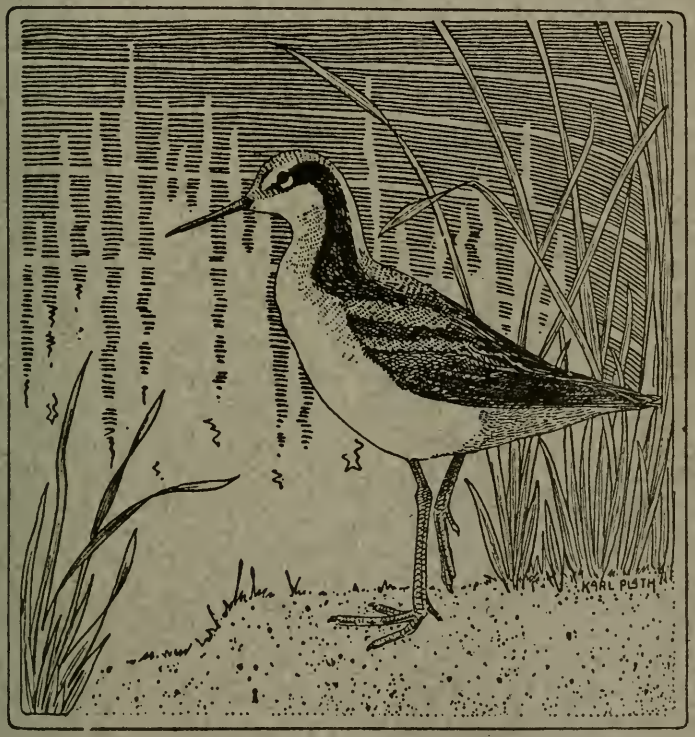

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